AGENCY ~~REVIEW~~ RESPONSE DRAFT

Data Quality Management Plan

Portland Harbor Pre-Remedial Design Investigation and Baseline Studies

Portland Harbor Superfund Site

AECOM Project Number: 60554349
Geosyntec Project Number: PNG0767

~~January~~ February ~~17~~18~~20~~, 2018

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CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

~~January~~ February ~~17~~18~~20~~, 2018

Kenneth M. Tyrrell
PDI Project Coordinator
AECOM Technical Services

Date

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LIST OF APPENDICES

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ACRONYMS AND ABBREVIATIONS

2-D	two-dimensional (e.g., map view, not elevation vertex)
3-D	three-dimensional (includes elevation vertex)
AECOM	AECOM Technical Services
DEA	David Evans and Associates
DQMP	Data Quality Management Plan
ECW	Enhanced Compression Wavelet
EDD	electronic data deliverable(s)
EDP	electronic data processor
EPA	United States Environmental Protection Agency
FGDB	file geodatabase
FGDC	Federal Geographic Data Committee
GCS	geographic coordinate system
Geosyntec	Geosyntec Consultants, Inc.
GIS	geographic information systems
GPS	global positioning system
Gravity	Gravity Marine
HTTPS	Hypertext Transfer Protocol Secure
MS	Microsoft
NAD83	North American Datum of 1983 (Horizontal Datum)
NAVD88	North American Vertical Datum of 1988
NGVD29	National Geodetic Vertical Datum of 1929
NSRS	National Spatial Reference System
ODEQ	Oregon Department of Environmental Quality
Pre-RD AOC Group	Pre-Remedial Design Agreement and Order on Consent Group
PDI	Pre-Remedial Design Investigation
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RGB	red, green, blue
RI/FS	Remedial Investigation/Feasibility Study
RM	river mile
SDE	ESRI ArcGIS Spatial Database Engine
Site	Portland Harbor Superfund Site
SMB	smallmouth bass

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SWAC	surface weighted average sediment concentration
USACE	U.S. Army Corps of Engineers
VPN	virtual private network
~~WQX~~	~~Water Quality Exchange~~

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1. INTRODUCTION

1.1 Project Background

The Portland Harbor Superfund Site (Site) is located in Portland, Oregon, on the lower Willamette River immediately downstream of the urban downtown. The Willamette River is a dynamic waterbody that originates within Oregon in the Cascade Mountain Range and flows approximately 187 miles north to its confluence with the Columbia River. The Site extends from river mile (RM) 1.9 near the mouth of the Willamette River upstream to RM 11.8 (Figure 1). The Downtown Reach, which includes the urbanized area of downtown Portland, is defined by the United States Environmental Protection Agency (EPA) as extending from RM 11.8 to RM 16.6. EPA defines the Upriver Reach as extending from RM 16.6 to RM 28.4.

The Site includes a water-dependent, highly industrialized area, which contains a multitude of facilities and both private and municipal outfalls. Land use along the lower Willamette River in the Portland Harbor includes marine terminals, manufacturing and other commercial and municipal operations, and public facilities, parks, and open spaces (EPA 2016). A federally maintained Navigation Channel, extending nearly bank-to-bank in some areas, doubles the natural depth of the river and allows transit of large ships into the active harbor; the Site serves as a major shipping route for containerized and bulk cargo. Common shoreline features within the harbor include constructed bulkheads, piers, wharves, buildings extending over the water, and steeply sloped banks armored with riprap or other fill materials (EPA 2016). The State of Oregon owns certain submerged and submersible lands underlying navigable and tidally influenced waters.

1.2 Purpose and Scope

The purpose of this Data Quality Management Plan (DQMP) is to provide a central and complete reference to address all the key requirements associated with creating, securely collecting, managing, distributing, and submitting to EPA high-quality tabular and geospatial data for all aspects of the Portland Harbor project. The DQMP defines the system architecture and security, tabular and geospatial data standards, and workflows for field data collection, data loading, creation of data work products, quality assurance/quality control (QA/QC), and internal/external data transfer operations.

1.2.1 Goals and Objectives

The goals and objectives of this DQMP are defined in this section as follows:

1. Ensure that environmental data and supporting information are collected and managed in a manner that preserves, protects, and makes the information available to all stakeholders, performing parties, and other affected groups.

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2. Provide standardization of processes to manage and transmit environmental and regulatory data.
3. Ensure efficient use of data among all project members and stakeholders to minimize errors and rework due to misunderstandings about the data's content, geodetic parameters, version, or format.
4. Provide a clear origin, date, and correlation of historical and new data to derivative work products developed during data interpretation and analysis.
5. Implement and operate a robust geospatial and tabular data repository that is secure and capable of supporting the needs of the project.

2. INFORMATION REPOSITORY CONFIGURATION

This section summarizes the software platform/version, system architecture, security, and accessibility specifications of the project information repository and the roles and responsibilities of data management personnel supporting the project.

2.1 System Software

The key software platforms and versions that will be used to support the project are listed in Table 1. Other add-ons, extensions, and specialty software products that may be used on the project are not included but will be referenced in project deliverables as appropriate.

2.2 System Architecture

The basic configuration and location of file server(s), database servers, SharePoint server/portal, and other internal network and web-based project resources are summarized in Table 2 and Figures 2 through 5. AECOM Technical Services (AECOM), Geosyntec Consultants, Inc. (Geosyntec), and project subcontractors are expected to maintain their own secure network and server infrastructure to support the project. Collaboration and file sharing between AECOM, Geosyntec, and support subcontractors will primarily be achieved through AECOM Online resources, including these web-based collaboration tools: Microsoft (MS) SharePoint (project files, field data, laboratory deliverables), ESRI ArcGIS for Server (including a web-based map viewer GUI), and Earthsoft EQuIS Enterprise Edition v6 (data viewer).

2.3 System Security, User Access, Back-Up

AECOM, Geosyntec, and support contractors are expected to maintain network and system security through a Windows Active Directory User ID and password implementation, along with respective company personal identity and network appliance protective measures. All are also expected to follow the privileged and confidential communication protocols defined for the project. AECOM and Geosyntec users working from remote locations will use their company

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virtual private network (VPN) login utilities and policies, and company intranet/network requirements when in the office.

Collaboration between AECOM, Geosyntec, and support subcontractors will be primarily through the project SharePoint portal, which will provide secure (i.e., using the Hypertext Transfer Protocol Secure [HTTPS protocol]) access to project team members regardless of office location or firm affiliation to appropriate SharePoint libraries and lists. Access to specific content areas of SharePoint will be controlled based on project roles, and the standardized access request and provisioning process addressed in detail in Appendix A (SharePoint Portal Access Instructions) will be followed. Pre-Remedial Design Agreement and Order on Consent Group (Pre-RD AOC Group) users and stakeholder users can also be provided access to the SharePoint site through this same process.

AECOM, Geosyntec, and support subcontractors are expected to follow network and enterprise resource backup, archiving, and retainage procedures relevant to their respective companies and the terms and conditions of contracts/subcontracts relevant to the project and the Pre-RD AOC Group.

~~2.4~~3. DATA MANAGER ROLES AND RESPONSIBILITIES

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The key roles and responsibilities of team members working on tabular and geospatial management activities are summarized in Table 3. All team members working with tabular or geospatial data will have a minimum of 5 years of experience with the tools and platforms relevant to their data management tasks, or will work under the supervision of persons with this level of experience. In addition, data managers involved with preparation and transmittal of electronic data deliverables (EDD) to EPA Region 10 and the Oregon Department of Environmental Quality (ODEQ) will be trained in the EPA Scribe.NET platform through available web-based training sessions and by the EPA data coordinator, as appropriate. Table 3 also summarizes the primary QC responsibilities of the listed team members and references checklists and related activities discussed in more detail in Section 8 (Project QA/QC Program).

~~3.~~4. TABULAR DATA STANDARDS

This section of the DQMP summarizes the tabular data standards to be used on the project, including the EQuIS project database specifications, internal AECOM EDD specifications, naming conventions for locations, minimum data field collection requirements, EPA Region 10 Scribe.NET requirements, and treatment of historical datasets.

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~~3.1~~4.1 Project Database

AECOM will use EQuIS Professional V6.6.0 to host the project database and central repository for all new and historical tabular data for the project. The project database will reside on the AECOM intranet, implemented on an MS SQL Server 2012 platform. The project database will be the single master data repository for all locations, samples, analytical chemistry results, biological data, field measurements, and other content in a tabular format. While location/positional data will be captured via global positioning system (GPS), the master repository of final, post-processed point data will be the EQuIS project database Location table. File geodatabases (or other geospatial vector or raster data formats) and/or MS SQL Server Spatial Database Engine (SDE) feature classes will be used as master repositories for geospatial data captured in polygon, line or point geometry format (see Section ~~4~~ 5 for more detail). Additional details are provided below regarding the overall project data model, EDD format, location nomenclature and minimum data field requirements, and EPA Scribe.NET data transmittal standards.

~~3.1.1~~4.1.1 Data Model

The EQuIS data model is customizable, and not all the table constructs are necessary or will be used on the Portland Harbor project. The primary table constructs/aliases intended to be used are as follows:

- [Project]
- [Facility]
- [Location]
- [Sample]
- [Analytical Results]
- [Lithology]
- [Biological]
- [Field Measurements]

The EQuIS data model is proprietary, and the ~~An~~ overall entity-relationship diagram (ERD) and detailed ~~specifications~~ database structures cannot be published in a final version of this document. However, EDD specifications ~~for the primary, reference, and domain tables for the above content areas are~~are included in Appendix B (Project Database: EQuIS Specifications~~Tabular Data/EQuIS Specifications~~). It is anticipated that some customization may be needed to the project database to address specialized field data requirements. For example, instrument calibration data and YSI Meter measurements may require tables other than those in the ~~non~~ EQuIS ~~tables~~ data model or the addition or use of EQuIS custom fields in the project database. These will all be documented and highlighted in revised versions of Appendix B.

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~~To the extent possible, data codes (e.g., location types, matrix types) that can be customized in the project database setup will use Scribe.NET data codes to facilitate translation/export of the project data when transmitted to EPA Region 10 for final project deliverables.~~ AECOM has reviewed the Scribe.NET specifications referenced in the *DRAFT Program Data Management Plan Portland Harbor Pre-Remedial Design Investigation – Portland Harbor Superfund Site* (EPA 2017) and is confident that all the required data can be exported from the EQuIS project database and provided to EPA in the Scribe.NET submittal schema. EQuIS has a Scribe.NET export utility and, to the extent possible, Scribe.NET valid values (e.g., location types, matrix types) will be seeded into the EQuIS project database ~~To the extent possible, data codes (e.g., location types, matrix types) that can be customized in the project database setup will use Scribe.NET data codes~~ to facilitate translation/export of the project data when transmitted to EPA Region 10 for final project deliverables. The data manager will confirm that any elements that are not compliant with the Scribe.NET schema will be identified and communicated to EPA prior to the start of any sampling program.~~It is anticipated that some additional customization will be needed to the project database to address both specialized field data requirements and to match or align Scribe.NET elements (see Section 3.1.5) with those currently defined in the EQuIS schema as summarized in Appendix B. For example, instrument calibration data and YSI Meter measurements may require non-EQuIS tables or the addition or use of EQuIS custom fields in the project database. These will all be documented and highlighted in revised versions of Appendix B.~~

~~3.1.2~~4.1.2 Electronic Data Deliverables

The AECOM V2.5.3 EDD format will be used to facilitate loading of new field and historical data to the project database. The EDD consists of Location, Sample, and Analytical Results portions. Support laboratories will be directed to provide the Analytical Results portion, and AECOM data managers will load Location and Sample data either through corresponding EDDs or insert scripts. For some higher-level project information (e.g., Facility ID), either import scripts or the EQuIS forms interface may be used to enter seed data. Potentially, biological data may also have to be loaded with import scripts or code authored and executed within SQL Server Management Studio software, as the standard AECOM format may not meet the project needs and because customizations are common for this type of data. The specifications of the EDDs to be used by AECOM ~~EDD specifications are~~ are included in Appendix B.

~~3.1.3~~4.1.3 Location Nomenclature

The naming convention and nomenclature to be applied to sample locations are summarized below and in Table ~~5~~4. The naming conventions and nomenclature for sample identifier data are described in detail in the QAPP (AECOM and Geosyntec 2018). A unique naming and numbering scheme will be critical to maintaining data integrity and will allow the reliable relating of tabular data to spatial representations of that data on maps. This will also maximize consistency in data management procedures between field crews, scientific disciplines, and the different types of field studies.

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It is proposed that the unique Location ID will consist of the "PDI" (Pre-Remedial Design Investigation and Baseline Sampling) prefix related to this study, followed by the alphanumeric designations included in Table 4~~5~~4. The alphanumeric designations are generally predicated on the river area grid cells developed for this study (i.e., for the stratified random samples) and the sequential sample station numbers defined in the QAPP (AECOM and Geosyntec 2018). ~~-~~This nomenclature will be applied to electronic and paper navigational maps that depict grid cells and target sampling locations to facilitate tracking of data collection activities and when performing spatial analysis of data.

~~3.1.4~~4.1.4 Minimum Field Form Data Fields

It is anticipated that all field data will either be collected on paper forms or in an electronic format (Excel, PDF forms) via an MS Surface Pro application, mobile device application, or custom user interface that may be different than the standard EDD format or the scripts that will be used to load data to the project database. This section summarizes the minimum data fields (see Table ~~6~~5~~5~~) that must be included on the field forms to ensure data integrity and the ability to create and load complete EDDs to the project database. Example field forms will be included in respective field sampling plan documents.

~~3.1.5~~4.1.5 EPA Data Submittal Standards

AECOM and Geosyntec will follow the specifications and requirements of the *DRAFT Program Data Management Plan Portland Harbor Pre-Remedial Design Investigation – Portland Harbor Superfund Site* (EPA 2017) in the preparation and submittal of project data to EPA Region 10. The ~~December~~ EPA 2017 document specifies the Scribe.NET data standard, related templates, valid values, training, and other requirements for transmittal and upload to the Scribe.NET platform. The Scribe entity-relationship diagram and other EDD specifications are included in Appendix ~~B~~C (EPA Region 10 Deliverables: Scribe.NET Specifications), and version information is provided in Table 1. As described earlier, to the extent possible~~,~~ the project team will incorporate EPA Region 10 matrix, sampling method, and other lookup and valid values into the domain tables and database set-up parameters in AECOM EDDs and the project database implementation to facilitate translation to appropriate Scribe.NET EDDs in final deliverables. Also, as stipulated in Section 4.1.1, AECOM's comparison of EQuIS to Scribe.NET specifications indicates all necessary data fields are available for export; however, the data manager will confirm that any elements that are not compliant with the Scribe.NET schema will be identified and communicated to EPA prior to the start of any sampling program.

~~3.2~~4.2 Tabular to Geospatial Operations

As described at the beginning of this section, the project database will be the master data repository for all locations, samples, analytical chemistry results, biological data, field measurements, and other content to be stored in a tabular format. While location and positional data will initially be captured via GPS, the master repository of final, post-processed location

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point data will be the EQuIS project database Location table. Here unique Location IDs and location coordinates will be stored for all point data or point data representations (e.g., centroids) of other spatial geometries (line or polygon). When tabular data are "attached" to spatial features or used in maps, user and project-specific tabular data exports will be prepared that can be imported to GIS to create maps and perform geospatial analyses. The tabular exports are expected to consist of Excel workbooks, comma-separated values, or other delimited text file formats generated from SQL queries to the project database. The export will always include a unique Location ID/index that can be joined to the geospatial point or object in a feature class. See Section 6.2 for additional details on this process.

~~3.3~~4.3 Historical Data

It is anticipated that certain historical tabular datasets (primarily related to analytical chemistry) will be loaded into the EQuIS project database to facilitate grouping, analysis, and interpretation of data as reported in project deliverables. The primary historical data identified for use on this project are listed in Appendix ~~C~~ D (List of Historical Tabular Datasets) and will be loaded into the project database. This list will be updated as data and loaded to EQuIS to document any assumptions, rules, or backfilling of missing data that was needed to enter the data into the master database. The datasets will be clearly flagged to distinguish them from new data collected for the project. The historical data will be organized by vintage/age and data quality in terms of detection limits, RM, or other designations to facilitate analysis. Historical datasets will likely be loaded into the project database via the EQuIS EQEDD or EZEDD interchange format to facilitate database field mapping and completeness checks. It should be noted that these datasets were developed by others, and the PDI project team is not the owner of the data. Accordingly, the historical dataset will be used "as is" apart from some data "cleanup" actions necessary to normalize and synthesize the disparate historical datasets into a consistent database.

~~4.~~5. GEOSPATIAL DATA STANDARDS

This section of the DQMP summarizes the geospatial data standards to be used on the project, including the following: geodetic standards, the project data model, the data format, naming conventions for themes and attributes, data quality and precision, metadata, and topology.

~~4.1~~5.1 Geodetic Standards

The project geodetic standards discussed in this section include required project datums and coordinate system parameters.

~~4.1.1~~5.1.1 Vertical Datum

The data managed for this project will primarily be two-dimensional (2-D) in nature, and therefore will not include a vertical component. However, sediment depth information will be three-dimensional (3-D). It is recommended for these datasets that the vertical datum standard

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will be North American Vertical Datum of 1988 (NAVD88) relative to the mudline elevation, if accurately measurable. Any vector datasets that use National Geodetic Vertical Datum of 1929 (NGVD29) will be converted via the VERTCON (version 2.0) program, accessible via the National Geodetic Survey Toolkit website. Vertical measurements and coordinates will be stored in units of international feet.

~~4.1.2~~5.1.2 Horizontal Datum

The horizontal datum standard that will be used is North American Datum of 1983 (NAD83), National Spatial Reference System (NSRS) 2007. Horizontal measurements will be stored in units of international feet.

~~4.1.3~~5.1.3 Coordinate System and Projection Parameters

The native format of geospatial data will be Geographic Coordinate System (GCS), NAD83 (NSRS 2007) as defined below.

Geographic Coordinate System
Horizontal Datum: D_NAD_1983_NSRS2007
Spheroid: GRS_1980
Semimajor Axis: 6378137.000000000000000000
Seminor Axis: 6356752.314140356100000000
Inverse Flattening: 298.257222101000020000

If a map projection is required for map or data deliverables, the projection parameters are as follows:

NAD_1983_2011_StatePlane_Oregon_North_FIPS_3601_Ft_Intl
WKID: 6559 Authority: EPSG

Projection: Lambert_Conformal_Conic
False_Easting: 8202099.737532808
False_Northing: 0.0
Central_Meridian: -120.5
Standard_Parallel_1: 44.33333333333334
Standard_Parallel_2: 46.0
Latitude_Of_Origin: 43.66666666666666
Linear Unit: Foot (0.3048)

Geographic Coordinate System: GCS_NAD_1983_2011
Angular Unit: Degree (0.0174532925199433)
Prime Meridian: Greenwich (0.0)
Datum: D_NAD_1983_2011
Spheroid: GRS_1980

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Semimajor Axis: 6378137.0
Semiminor Axis: 6356752.314140356
Inverse Flattening: 298.257222101

~~4.2~~5.2 Geospatial Data Model/Content Standards

The geospatial data model will be an extension of the tabular data model described in Section ~~3~~ 4 and Appendix B. The project database will be the master data repository for all locations, samples, analytical chemistry results, biological data, field measurements, and other content in a tabular format. Although the location/positional point data are inherently geospatial, the master repository of final, post-processed point data will be the EQuIS project database Location table. File geodatabases (or MS SQL Server SDE) will be used as master repositories for geospatial data captured in line or point geometry format.

The data model for the geospatial portion of the project dataset is expected to consist of three broad groupings: 1) historical data, 2) new re-baseline data, and 3) derivative work products. It is expected that these geospatial datasets will have varying degrees of quality and completeness with regard to attributes, standardized data codes, and precision. The standardization and data model of geospatial datasets are described in more detail below.

~~4.2.1~~5.2.1 Historical Data

An initial listing of the known and previously used historical geospatial data is included in Appendix ~~D~~ E (Geodatabase Specifications). It is proposed that these data be reviewed, consolidated, and standardized prior to use in any analyses or work products. Point data that are redundant to historical tabular datasets will be removed, and any surviving point, line, or polygon data will be reviewed in further detail for consistency of attributes, domain values, naming conventions, geodetic parameters, and presence of sufficient metadata. These data will then be consolidated into one or more master geodatabases or feature datasets for use on the project following the agreed-upon geospatial standards developed during the review. Thus, a complete and updated geodatabase specification is not currently available. However, one will be developed on approval of this DQMP. It should be noted that historical geospatial datasets were developed by others, and the PDI project team is not the owner of the data. Accordingly, the historical geospatial datasets will be used "as is" apart from the "cleanup" activities proposed above.

~~4.2.2~~5.2.2 New Re-Baseline Data

The new data to be collected during the re-baseline effort include the studies referenced in Table ~~5~~4, including the Bathymetric Survey (subcontractor David Evans and Associates [DEA]) and the Fish Tracking Survey (HTI-Vemco). Three general feature classes are anticipated to be generated from this work to support the primary studies, and their preliminary specifications are included in Appendix ~~D~~E. One feature class will support GPS data collection and location verification. The final post-processed point data from this geospatial dataset will be loaded to the

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EQuIS Location table. The second feature class is a template for the core attributes to be included when tabular data are exported from EQuIS and joined to geospatial data. The third feature class is to support georeferencing of photographs. The geospatial specifications of deliverables from DEA, HTI-Vemco, and Gravity Marine (Gravity; primary vessel contractor providing boat position data) are under development and will be added to Appendix ~~D~~ E when available. It is anticipated that some additional data field matching and/or update of the current specification will be needed to align GPS-related data fields in the Scribe.NET Location EDD with those stored either in the tabular project database or the project feature classes described above and in Appendix ~~D~~E.

~~4.2.3~~5.2.3 Derivative Work Products

Derivative work products may include concentration isopleths, volumetric calculations, mass loading calculations, and other content developed from geospatial analysis. The naming conventions, attribution, domain values, topology, and other specifications for this content have yet to be fully determined. In general, it is anticipated that ESRI Map Packages or documented sets of vector or raster data files will be prepared to support any work products of this nature; these packages will provide full metadata, supporting feature classes, .MXD files, layer files, and other content for a self-contained deliverable. The geospatial specifications for these deliverables will be added to Appendix ~~D~~ E when available.

~~4.3~~5.3 Precision and Data Quality

~~4.3.1~~5.3.1 Vector Datasets

General vector dataset precision and quality requirements are as follows:

- Only vector data will only be permissible in ESRI ArcGIS geodatabase feature class and feature datasets format. Shapefiles are allowed only if authorized by the lead data manager.
- Vector data will be managed and edited using ArcGIS or other GIS editing tools or software.
- Attributes for shapefiles will be in a tabular dBASE format.
- Vector datasets will be natively stored in geographic coordinates and expressed either in decimal degrees, and will include a horizontal datum definition (such that conversion to the project coordinate system can be facilitated) or in Oregon State Plan North (feet) coordinate system (as defined in Section 45.1.3) when used for calculating length and area, as long as properly documented.
- Numerical Data will be stored as Double Precision, with a minimum precision of eight decimal digits (unless otherwise indicated).
- Vector datasets will contain proper negative values for Longitude.

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Point dataset precision and quality requirements are as follows:

- Datasets will be represented by a pair of double-precision coordinates in the order of Northing/Easting or Latitude/Longitude.
- All point datasets will adhere to applicable point topology and complete attribution.

Polyline dataset precision and quality requirements are as follows:

- Polyline datasets will start, finish, and only connect to one another at nodes, edges, or vertices.
- All polyline datasets will contain arc topology and complete attribution.
- It is not acceptable for polyline datasets to contain self-intersections or to extend through nodes (i.e., it is unacceptable to have the right and left polygons equal the same polygon).
- In the creation process, datasets should be created in the native GCS and re-projected to the Oregon State Plane North Coordinate System for presentation purposes or length calculations, if appropriate.

Polygon dataset precision and quality requirements are as follows:

- Polygon datasets will be represented by closed polygons with only one label point.
- The interior edge will be defined in a counter-clockwise direction, and each polygon dataset will be edge-matched across projection zones. In the creation process, datasets will be created in their native PCS or GCS and re-projected to the Oregon State Plane North Coordinate System for presentation or area calculations.

~~4.3.2~~5.3.2 Raster Datasets

Raster dataset precision and quality requirements are as follows:

- Imagery derived from sub-sampling techniques or from lossy compressed sources will be noted in metadata when known.
- Raster image files created through satellite imagery, aerial photography, or scanning will be delivered as uncompressed tagged image file format (TIFF) or geoTIFF files, and will include a TIFF world file (.tfw).
- The TIFF file datasets must have row-major orientation and non-planar configuration, and must be non-tiled.
- Other bi-level images that are acceptable are Enhanced Compression Wavelet (ECW) and multi-resolution (MrSID) images with compression ratios equal to or greater than 1:10.
- Any other lossy or lossless compression formats will be noted.

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- Bi-level images (1-bit, composed of black and white colors only) should be stored using lossless image compression, as outlined in the TIFF Revision 6.0 document.
- Full-color images (i.e., pixels made up of red/green/blue [RGB] components) should contain a color map or palette.
- Palette color images should have their component value referenced to a full red/green/blue look-up table.

Scanned maps precision and quality requirements are as follows.

- The method of creating raster imagery through scanning hard-copy maps will be done using a minimum scanning resolution of 100 microns or 254 dots per inch.
- The raster image accuracy must exceed the original map scale and meet the minimum standard as follows:
    - Scale 1:10,000 – Required accuracy is 6 feet/2 meters
    - Scale 1:50,000 – Required accuracy is 15 feet/5 meters
    - Scale 1:250,000 – Required accuracy is 75 feet/25 meters

~~4.4~~5.4 Metadata Standards

The required project metadata standards, including any minimum requirements, are described in this section. All geospatial data, including native and derived work products, will adhere to these standards.

~~4.4.1~~5.4.1 Format

All geodatabase feature classes shall have metadata included in their native geodatabase. For files outside of a geodatabase, metadata will have a base name identical to its corresponding spatial export file and will be delivered in an .xml format that is compatible with the Federal Geographic Data Committee (FGDC) output standards, found at https://www.fs.fed.us/gac/metadata/index.html.

Metadata will be considered compliant with the FGDC standard when all required information is provided. This includes information for all mandatory elements—plus information for all mandatory if applicable elements when relevant to the dataset. In addition to meeting these minimum requirements, additional elements deemed optional by the FGDC may be considered mandatory if applicable. For derivative geospatial work products, many of these FGDC requirements may be redundant or unnecessary and may be waived by mutual agreement.

The project-specific mandatory (if applicable) elements are as follows:

- FGDC Section 1: Identification Information

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    - Point of Contact
    - Data Set Credit
    - Security Information
- FGDC Section 2: Data Quality Information
    - Quantitative Attribute Accuracy Assessment
    - Quantitative Horizontal Positional Accuracy Assessment
    - Quantitative Vertical Positional Accuracy Assessment
    - Process Contact
- FGDC Section 3: Spatial Data Organization Information
    - Point and Vector Object Information
    - Spatial Data Transfer Standard Terms Description
    - Point and Vector Object Count
    - Raster Object Information
- FGDC Section 4: Spatial Reference
    - No additional information required
- FGDC Section 5: Entity and Attribute Information
    - Attribute Value Accuracy Information
- FGDC Section 6: Distribution Information
    - Technical Prerequisites
- FGDC Section 7: Metadata Reference Information
    - Metadata Review Date
    - Metadata Access Constraints
    - Metadata Use Constraints
    - Metadata Security information
- FGDC Section 8: Citation Information
    - No additional information required
- FGDC Section 9: Time Period Information
    - No additional information required
- FGDC Section 10: Contact Information
    - No additional information required

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~~5.~~6. FIELD OPERATIONS/DATA WORKFLOW

This section summarizes the data workflow and operations at the Field Office and Main Office while active field data collection operations are occurring, as depicted in Figure 6. The section includes a summary of data-related field preparation activities, a summary of samples/data to be collected, the data processing activities to be conducted in the Field Office, as well as data support activities to be conducted at the Main Office, including loading data to the project database.

~~5.1~~6.1 Field Preparation/GPS Support

The data-related activities expected in preparation of field deployment include securing and procuring Trimble R1 (or equivalent) GPS units that will be tethered to MS Surface Pro Tablets (or their equivalent), developing and finalizing paper or electronic field forms for ArcPAD or other mobile device interfaces, developing procedures to establish and maintain GPS ground control for all surveys, and finalizing plans for accurate cross-referencing of location coordinate data between Gravity's positional recording and those collected by AECOM and Geosyntec. It is also anticipated that field staff and field technicians operating GPS equipment and the tablet interface will be trained in equipment use, including the proper entry of data into field forms with unique Location IDs, Sample IDs, and other minimum data fields as defined in Section ~~3~~ 4 of this document. The process for packaging field data, labeling samples, and transmitting/delivering data to the Field Office will also be included in the training.

~~5.2~~6.2 Sample and Data Collection Summary

The complete requirements for sample data collection are included in the QAPP (AECOM and Geosyntec 2018), and are only summarized here. It is anticipated that samples will be numbered according to the nomenclature defined in the QAPP. Other data to be collected, including biological counts, photos, field measurements, and other types of observations, are expected to follow the same naming conventions. The names of the electronic files and scanned field forms are also expected to follow these naming conventions, and as described in Section ~~5~~6.5, additional file metadata will be applied when the field data are uploaded to the New Field Data and Sample Tracking libraries of the project SharePoint site. The contracted laboratories for this project are already familiar with the AECOM v2.5.3 EDD and the related EQuIS Electronic Data Processor (EDP) tool, but reference values and upload instructions will be communicated to them prior to the start of field work. AECOM anticipates that contracted laboratories will use the EDP tool to check their completed analytical result EDDs prior to uploading them to the project SharePoint site.

~~5.3~~6.3 Bathymetry Survey

AECOM subcontractor DEA will conduct a bathymetric survey, and Geosyntec will oversee their field efforts. DEA will conduct a multi-beam bathymetric survey of the Lower Willamette River

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from approximately RM 1.9 to RM 11.8 and down the Multnomah Channel from the Willamette River to the Sauvie Island Bridge. Coverage in Multnomah Channel will be riverward of all floating homes and marinas. All bathymetric surveying will be consistent with prior surveys for the Lower Willamette Group and exceed the standards established by the U.S. Army Corps of Engineers (USACE) Engineering and Design Manual for Hydrographic Surveying (EM 1110-2-1003), "Hydrographic Surveying," in accordance with requirements for "Navigation & Dredging Support Surveys." All work will be supervised and final deliverables approved by a DEA Oregon-registered Professional Land Surveyor and by a National Society of Professional Surveyors/The Hydrographic Society of America Certified Hydrographer.

The geodetic controls are anticipated to be consistent with the specifications of Section ~~4~~ 5 of this document, and deliverables are expected to include the following:

- A series of map products at a scale of 1 inch = 400 feet
- Contour maps of the surveyed area at a 2-foot contour interval
- Hillshaded relief maps color coded by depth of the surveyed area
- A report outlining survey equipment, methodology, and analysis
- Electronic versions of all map products consistent with the format/requirements of this DQMP
- Georeferenced TIFF images for each difference analysis

Electronic deliverables are expected to be uploaded to the project SharePoint New Field Data library, with the possible exception of the geoTIFF files, which may be too large to efficiently transmit this way. Geospatial specifications of relevant work products will be added to Appendix ~~D~~ E when available.

~~5.4~~6.4 Acoustic Fish Tracking Survey

AECOM and subcontractor HTI-Vemco will conduct an acoustic fish-tracking study to capture fine-scale temporal and spatial movement of smallmouth bass (SMB) in the Portland Harbor study area. Acoustic receivers will be deployed on the bottom of the river to record data on the movement of tagged SMB in the lower Willamette River. The results will be used to: 1) inform the fish tissue sampling plan scheduled for late summer 2018; 2) refine the surface weighted average sediment concentration (SWAC) segments used to evaluate changes in surface sediment concentrations; 3) refine understanding of the Conceptual Site Model (CSM) for remedial design purposes and reduce uncertainty about remedy effectiveness for fish tissue recovery; and 4) help inform the future institutional control plan. The work will be performed in collaboration with Karl Gustavson, EPA Office of Superfund Remediation and Technology Innovation (formerly of the USACE), and experienced staff from the USACE Engineer Research and Development Center.

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Electronic deliverables are expected to be uploaded to the project SharePoint New Field Data library, with the possible exception of the large raw data files, which may be too large to efficiently transmit this way. Geospatial specifications of relevant work products will be added to Appendix D when available.

~~5.5~~6.5 Field Office Data Processing

The procedures for managing incoming data from field crews/boats are described in this section. Subsections include details on potential data transcription procedures, file organization, and the uploading of raw field data to SharePoint to make it accessible to Main Office data managers.

~~5.5.1~~6.5.1 Incoming Data Management and Transcription

A dedicated technician will provide support in the Field Office to collect and download data/files from electronic devices (e.g., cameras, GPS); collect, organize, and scan any paper forms or field book entries to PDF format; assist with sample containers management and tracking; assist with field equipment troubleshooting; and perform rudimentary data file completeness checks and inform field crew members of incomplete or problematic data sets.

The dedicated technician is also expected to interact with field team leads in tracking the completion of sampling activities by marking off grid cells on large wall maps and/or electronic versions of maps deployed in AECOM ArcGIS Online. The maps will include grid cell labelling per the location-naming nomenclature described in Section ~~3~~4.1.3.

It is anticipated that some of the incoming data may need to be transcribed or otherwise repurposed to an electronic format for ultimate loading to the project database. The Field Office technician is expected to perform the transcription as well as manage and organize files of photos, scanned documents, or other paper and electronic content.

To properly perform the functions summarized in this section, the technician will be trained, as necessary, in the requirements stipulated in this DQMP document, the QAPP, and other field sampling documents.

~~5.5.2~~6.5.2 New Field Data Management in SharePoint

The primary project SharePoint library that will be used in the Field Office is the New Field Data library. The New Field Data file upload form depicted in Figure 7 shows the additional metadata to be tracked and entered for incoming data by the Field Office technician. When multiple files are related to an incoming dataset, the related files will be zipped together and named with the Location ID and Sample ID. The data fields are self-explanatory. A fixed list of values was employed for the Study Type, Data Type (tabular, geospatial, photos, scans, other), Vessel, and Contractor. A checkbox to confirm data completeness is also included. The Field Office technician is expected to manage SharePoint file uploading operations per the *Project SharePoint User Guide* (AECOM 2017).

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~~5.6~~6.6 Main Office Data Management Operations

This section will describe the process by which data managers in the Main Office will review and manage incoming field data uploaded to the project SharePoint site. Some overlap is expected with the Field Office technician, especially in the area of sample tracking, which is described below. In this section, the process of data loading to the project database is described, along with the EQuIS data validation tools that will be used to support project chemists.

~~5.6.1~~6.6.1 Tracking Samples and Complete Field Data in SharePoint

Data management staff in the Main Office will interact with the Field Office technician by using the Sample Tracking library depicted in Figure 8, and by monitoring the New Field Data library for any uploaded data that are marked as complete. These two operations are described below.

It is anticipated that the Field Office technician will enter sample tracking information by uploading the scanned Chain of Custody form to the Sample Tracking library as sample containers come in from the vessels and field crews, and as they are packaged and shipped to support laboratories for analysis. Data management staff in the Main Office will use the SharePoint library to track and confirm when laboratories receive the packages. They will also monitor for the submittal and receipt of laboratory results in the AECOM v2.5.3 EDD format. These are expected to be uploaded by the laboratories directly to the Data Loading library depicted in Figure 9. After the EDDs are received from the labs in the Data Loading library, data management staff will marked them as complete in the Sample Tracking library.

Data management personnel in the Main Office are also expected to monitor the New Field Data library and to download and inspect files that are marked as complete. The electronic files or content that was transcribed from paper forms from this area may require additional actions or staging for conversion to AECOM EDD format. Clean-up actions may include backfilling of any missing attributes, cross-checking of appropriate data codes, and verification of proper Location IDs. In summary, the metadata and file tracking functionality of the project SharePoint New Field Data and Sample Tracking libraries will be critical and integral to the overall data loading to the project database and the management operations described in the next subsection.

~~5.6.2~~6.6.2 EDD Management in SharePoint

The SharePoint Data Loading library depicted in Figure 9 will be used as the master repository of all EDDs prepared and ready for loading to the project database. It will also be used to track the status of EDDs that have been loaded and for QA/QC tracking of data already loaded to the project database. Final loaded EDD files may also be backed up to the network project folders.

~~5.6.3~~6.6.3 EQuIS Project Database Operations

EQuIS database operations will consist of the project database setup, seeding of reference values, seeding of project and facility (i.e., Portland Harbor site) data, and sequential loading of location,

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sample, and analytical result EDDs. As described earlier, to the extent possible, Scribe.NET reference values will be seeded to appropriate EQuIS tables to facilitate the ultimate transfer of data to EPA Region 10. EQuIS Professional v6.6.0 desktop, the EDP module, and the AECOM v2.5.3 formatted EDDs will be the primary tools used to load data to the project database. Figure 10 depicts the desktop interface for location data loading as an example. Subsets of the data will also be securely exposed to Geosyntec team members via EQuIS Enterprise as appropriate to meet project requirements.

Some data entry operations may be performed through the EQuIS forms interface or via SQL insert scripts executed through SQL Server Management Studio software. Depending on the format received, the acoustic fish tracking data and possibly some field measurement data may be loaded this way. These tools will more likely be used to make adjustments to data already loaded into the project database.

After the data are loaded to EQuIS, a number of QC checks will be performed to verify the completeness and condition of data inside the master repository. Data QC will consist primarily of comparing row counts from the EDDs to the loaded number of records to the appropriate EQuIS tables. The EDP data-checking module is expected to capture any valid values issues prior to loading into the project database, so such checks are not anticipated. A content/logic cross-check to verify the correct hierarchy of locations to samples, and samples to analytical results, will also be performed to ensure the correct association of chemistry results to field locations. Completion of these tasks will be tracked in the Data Loading SharePoint library.

In addition, the EQuIS Data Validation Assistant module will be used to facilitate the proper flagging of analytical data qualifiers by project chemists. This EQuIS tool creates an Excel workbook similar to the one depicted in Figure 11, which will be provided to project chemists and/or third-party validators into which they will enter their qualifier flags and associated narrative in specific blank columns. The tool will be used to export loaded project analytical chemistry data in batches, and the chemists will apply their flags and return the workbooks for synchronization with the project database using EQuIS software. In order for the synchronization to work properly, it will be critical that the validators use the workbook “as is” and not modify columns and content other than to apply their proper validation codes in the indicated columns.

~~6.~~7. POST-FIELD OPERATIONS/DATA WORKFLOW

This section summarizes the data management activities and workflow primarily for tasks performed in the Main Office after the field work has been completed. There may be some chronological overlap of some tasks described below with the field data collection effort. The loading and management of historical tabular and geospatial data are discussed here; also discussed are data export operations to support analysis and general geospatial data management tasks.

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~~6.1~~7.1 Historical Data Review

The overall project work plan includes a Data Compilation task (Task 4) with a stated purpose of identifying, reviewing, compiling, and summarizing Portland Harbor and upstream data that were collected since the Remedial Investigation/Feasibility Study and that are relevant to this project. The following subsections describe the data management activities associated with this task.

~~6.1.1~~7.1.1 Loading Tabular Historical Data to EQuIS

A preliminary list of the tabular historical datasets to be incorporated into the project database is provided in Appendix ~~C~~D. AECOM will work with Geosyntec to review these datasets to first distinguish which data are inherently tabular (e.g., chemistry results tied to data points) compared to those which are primarily geospatial (e.g., physical features tied to lines or polygons). The tabular dataset will then be secured, organized, and properly formatted (i.e., into the EQuIS EQEDD or EZEDD formats, or a format that allows for field-mapping to one of these formats) for loading to the project database. Although the datasets are anticipated to be loaded primarily by the EDD approach described in Section ~~5~~6.6, some assumptions and backfilling of required domain values may be required. The data will be organized by owner, study, or project so that they are clearly distinguishable from new data collected by AECOM and Geosyntec. This will also allow easier separation of data based on such things as quality, content, and detection limits. ~~-~~It should be noted that these datasets were developed by others, and the PDI project team is not the owner of the data. ~~-~~Accordingly, the historical dataset will be used "as is" apart from the normalization and standardization performed for organization and to facilitate interpretation.

~~6.1.2~~7.1.2 Managing Historical Geospatial Data

As described in Section ~~4~~5.2.1, an initial listing of the known and previously used historical geospatial data is included in Appendix ~~D~~E. This list already contains a preliminary interpretation of the historical datasets that are deemed to be inherently geospatial rather than tabular datasets appended to geospatial point data. These data need to be reviewed in detail, consolidated, and standardized, as the naming conventions used for the filenames, feature classes, and attributes are widely variable. The content also needs to be grouped thematically and then loaded to a master geodatabase (either MS SQL Server SDE or file geodatabase [FGDB]) so that there is consistency in the attributes, domain values, naming conventions, geodetic parameters, and presence of sufficient metadata. Once this effort is complete, an updated geodatabase specification can be prepared and added to Appendix ~~D~~E. It should be noted that historical geospatial datasets were developed by others, and the PDI project team is not the owner of the data. ~~-~~Accordingly, the historical geospatial datasets will be used "as is" apart from the cleanup activities proposed above.

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~~6.2~~7.2 Data Summarization Rules, Exports, and Tracking

This section summarizes the following: quantitative data summarization rules; the process for requesting, extracting, and transmitting historical and new data from the project database or geospatial repository; methods for tracking, managing, and implementing version control of the exported datasets; and the process for submitting final project deliverables to EPA Region 10.

~~6.2.1~~7.2.1 Quantitative Data Summarization and Duplicate Rules

Carbon normalization calculations and analyte summations will be calculated following the rules defined in the Portland Harbor Remedial Investigation/Feasibility Study (RI/FS), Appendix A (EPA 2016). ~~–~~The calculated values will be stored as separate analyte concentrations in the project database. ~~–~~Deviations from this approach that may result from data review and analysis will be fully documented and reported in any project deliverables or data exports.

All field duplicates, lab replicates, and parent samples will be loaded, clearly linked, and stored in the project database. ~~–~~Exports will clearly discriminate parent from duplicate and replicate samples; calculations related to these samples may use maximum value, average, or include all sample values.

~~6.2.2~~7.2.2 Extracting and Transmitting Data

The universal data request/transmittal form included in Appendix ~~E~~ F (Data Request/Transmittal Form) will be used for both tabular and geospatial data requests and transmittals. This form will be paired with the SharePoint List depicted in Figure 12 to track the various data requests and exports. The List format was implemented to allow multiple files to be associated with each request and data exchange. The List will serve as a repository for both the request/transmittal form and the actual datasets themselves which will be uploaded and exchanged by project team members.

To expedite delivery of data to key Geosyntec team members required to quickly review and analyze incoming data, the content will be made available through secure web services (e.g., Enterprise EQuIS and/or ArcGIS Server Online), and/or an expedited bulk export and transmission functionality (data push) with data transmitted in regular, mutually agreed time ~~internals~~ intervals shortly after it is loaded. ~~–~~Under these circumstances, actual transmittals may not be necessary, but a request will still be created for the purposes of setting permissions, exposing the appropriate data sources, or tracking the regular delivery of expedited content to project team members. This SharePoint implementation will allow tracking of all requests and implement a rudimentary version control process so that the origin and original condition of exchanged data are captured in a centralized location.

The data will be transmitted ("pushed") to Geosyntec via email and a data export/report after the initial dataload, and again after validation qualifiers are applied. Standard QA/QC checks will be part of all data loading activities and will precede all push notifications. AECOM will also have a

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process for notifying Geosyntec (i.e., via an automated data report) to reconcile other changes/updates made to the data or metadata at times other than during the initial load and application of validation qualifiers. The intent of these procedures is that Geosyntec has an exact copy of the project database at any time they need to perform analyses and generate work products.

As described in other sections of this document, it will be critical to distinguish datasets that are inherently tabular and stored in the project database from pure geospatial datasets, and to identify hybrid tabular/geospatial datasets created by joining tabular exports to geospatial point, line, or polygon data. For tabular exports, some basic specifications for the output and format are as follows:

- ASCII text flat files or Excel workbooks are specified.
- The first row in the file will contain the field names, which are to consist of uppercase letters, numbers, or underscores (i.e., no special characters).
- The first field/column in the file will be dedicated to the unique identifier (Location ID).
- Text qualifiers, such as single or double quotes, and other special characters will not be included in the content.
- Commas (,), pipes (|), or other suitable delimiters will be used for text file exports.
- The SQL statement used to extract the data will be included with the export.

The specifications for geospatial and hybrid geospatial/tabular dataset exports will be developed as the project progresses and added to future versions of this document. A brief summary of the requirements for derivative geospatial work products is provided in Section 6.3.3.

~~6.2.3~~7.2.3 EPA Tabular Data Submittals

As specified in the EPA Region 10 Data Management Plan (EPA 2017), AECOM and Geosyntec will follow the specifications and requirements of the Scribe.NET data standard, related templates, and valid values in their submittal of final tabular datasets to EPA and ODEQ stakeholders. Unless directed otherwise, AECOM only intends to transmit final data (that has been subjected to all applicable QC checks) to EPA via the Scribe.NET format. Project data management staff will take the appropriate training and secure Scribe.NET accounts to be able to properly upload these datasets to the Scribe.NET portal. It is assumed that only the data collected as part of the new studies will be uploaded to Scribe.NET unless AECOM and Geosyntec are directed to also load any historical datasets identified during the Data Compilation Task (Task 4).

7.2.4 EPA Geospatial Data Submittals

~~Additional guidance is needed from EPA Region 10 regarding the submittal of~~G~~ inherently geospatial~~cospatial deliverables will be submitted to meet the requirements specified in the EPA Region 10 GIS Data Deliverable Guidance (EPA 2013), the National Geospatial Data Policy

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Procedure for Geospatial Metadata Management (EPA 2010), and the National Geospatial Data Policy (EPA 2008) ~~work products~~. Prior to submittal to EPA, the geospatial work products will be~~,~~ reviewed following the QA/QC checks and procedures defined in Section 8.2. ~~including bathymetry, acoustic fish tracking data, and any derivative work products such as volumetric calculations, isopleth contours, and other geospatial analysis feature classes developed during the interpretation and report writing phases of the project. The current Statement of Work references the Water Quality Exchange (WQX) format (formerly STORET) for geospatial submittals; however, this is another tabular data submittal specification, and it is not specifically geospatial. At a minimum~~In addition, AECOM and Geosyntec will submit geospatial deliverables in an ArcGIS v10.5 FGDB format, following the geodetic and metadata requirements specified in Section ~~4~~ 5 of this document. This format is consistent with other requirements stipulated in ~~of~~ the Statement of Work. In addition, the data will be submitted as a stand-alone ESRI Map Package with the .MXD file, the layer file, and nested source data and directory structures. ~~including~~Anticipated geospatial work products are expected to include bathymetry, acoustic fish tracking data, and any derivative work products such as volumetric calculations, isopleth contours, and other geospatial analysis feature classes developed during the interpretation and report writing phases of the project.

~~6.3~~7.3 Geospatial Data Management

The general process and procedures to be used by AECOM and Geosyntec in geospatial data management are described on this section. These procedures pertain to data that is inherently geospatial and not a product of tabular exports joined to the spatial features described in earlier sections of this document.

~~6.3.1~~7.3.1 Geospatial Data Configuration

AECOM and Geosyntec will initially use FGDBs to manage inherently geospatial datasets for the project. Each firm will maintain separate work areas for geospatial data management while developing work products according to the standards defined in Section ~~4~~5. After the review, compilation, standardization, and organization of historical datasets described in Section ~~4~~5.2.1 and ~~6~~7.2.1, AECOM will create a master repository of the geospatial data to be shared and used collaboratively with Geosyntec. This repository will either be transmitted as a FGDB or a web service configured in an MS SQL Server SDE implementation on the AECOM Online resource. The general organization of the proposed configuration is depicted in Figure 13. The master repository is anticipated to have standardized classifications and thematic content organization, including at a minimum the following subject matter:

- Base layers (hydrography, roads/infrastructure, shorelines)
- RM/thalweg

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- Imagery (LiDAR and aerials)
- Bathymetry (new study)
- Topography
- Acoustic fish tracking (new study)

Of particular importance may be the RM designation of the geospatial data, as it is used in many historical references. In order to maintain consistency with previous reports, AECOM and Geosyntec propose to use the RMs generated for the Sediment Profile Imaging Report (Germano & Associates 2014) for RM 1 through RM 11. It appears these RM markers began with the RMs extracted from USACE RM data.

However, the previous RMs do not align with the USACE RMs after RM 11. Therefore, the RM data will be assessed in more detail to determine what should be used from RM 11 to RM 27. These two data sets will be combined, a river centerline (mutually agreed thalweg interpretation) will be generated, and then this route will be calibrated to 0.1 RM.

~~6.3.2~~7.3.2 Geospatial Data Editing

Geospatial data editing operations will be at the discretion of a small group of GIS technicians and/or analysts on the AECOM and Geosyntec team, and the operations will in some part be determined based on the final master repository configuration and whether SQL Server SDE and/or FGDBs are used. Basic rules proposed for geospatial editing operations are as follows:

- Only limited data editing will be performed on third-party datasets. One-time or specialized edits will be performed on copies of FGDBs for local use, but not on the master repository.
- Attributes within the feature classes will be complete to the maximum extent possible, and free-form data fields should not repeat information captured in standard domain values.
- Any significant changes to geospatial data completed by AECOM or Geosyntec will be communicated and shared through the data transfer process described in Section ~~6~~7.2.1.
- AECOM and Geosyntec will work collaboratively when updating nomenclature, attribution, and domain values. They will also work collaboratively when making other decisions regarding standardization of geospatial content.

~~6.3.3~~7.3.3 Derivative Geospatial Work Products

The scope and content of derivative geospatial work products have not been completely defined and are expected to evolve as historical data are reviewed, as new data are collected, and as data are interpreted as part of the reporting phase of the project. At this time the following basic requirements will be implemented for derivative geospatial work products, which are defined as

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the output of GIS analysis (volumetric calculations, concentration isopleths, mass loading calculations):

- Geospatial deliverables will be in an ArcGIS v10.5 FGDB format or greater.
- Work products will comply with the geodetic and metadata requirements specified in Section 45.
- The deliverable will be a stand-alone ESRI Map Package with the .MXD file, the layer file, and nested source data and directory structures; or different formats as needed and agreed to by the project team
- New content, which may be used as a source for other analyses or may stand alone as a geospatial dataset, will be imported and added to the master geospatial repository. Such content will be called out in any data transmittal.

~~6.3.4 Geospatial Data and Deliverables QA/QC~~

~~Geospatial data and deliverables prepared for the project will undergo a QA/QC review that will be documented by the checklist included in Appendix F G (Geospatial Data QA/QC Form). This review will be performed by AECOM and/or Geosyntec for incoming data or outgoing geospatial work products. The review will also be part of an internal process for checking our own work products, data exports, and other deliverables.~~

~~6.3.5~~7.3.4 Publishing Geospatial Data via ArcGIS Web Services

It is anticipated that some aspects of geospatial data management and the map display requirements for the project will be best addressed through the deployment of a secure, web-based data and map sharing environment. Specifically, internal or draft versions of figures, spatial analysis results, tracking of complete field sampling activities, and maps related to derivative work products will be displayed using the AECOM Online ArcGIS Server platform. The user permissions, layers to display, and other publishing procedures will be documented in Standard Operating Procedures as required to support the project.

8. PROJECT QA/QC PROGRAM

This section summarizes the overall QA/QC Program for the Portland Harbor project referencing specific procedures for managing tabular data, geospatial data, and other aspects and content of project deliverables. In general, the QA/QC Program is intended to comply with ASQ/ANSI E4:2014. The overall QA Manager for the project is Amy Dahl, as referenced in the QAPP (AECOM and Geosyntec 2018) and Table 3 of this document. Data management and GIS staff will also perform specific QC functions as summarized in Table 3 and Section 3. Finally, the QAPP and individual field sampling plans summarize specific QC functions and tasks to be performed by subject matter experts in support of the overall project QA/QC Program. That information is summarized in Table 6.

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8.1 Tabular Data

Tabular data and deliverables prepared for the project will undergo a QA/QC review that will be documented by the checklists included in Appendix G (Tabular Data QA/QC Forms). The tabular data QA/QC review will consist of two chronological components, first related to incoming data from field crews, followed by review of laboratory results and third-party validation results. Both of the processes and checklists are closely integrated with the SharePoint objects described earlier in this document, including the New Field Data (Figure 7), Sample Tracking (Figure 8), and Data Loading (Figure 9) libraries. These libraries, as well as the Data Exchange SharePoint list (Figure 12), are critical tools for tracking and managing the quality of project tabular data and deliverables.

8.2 Geospatial Data

Geospatial data and deliverables prepared for the project will undergo a QA/QC review that will be documented by the checklist included in Appendix H (Geospatial Data QA/QC Form). The Data Exchange SharePoint list (Figure 12) tool will be used in conjunction with the checklist for tracking and managing the quality of project geospatial data and deliverables. The checklist review will be performed by AECOM and/or Geosyntec on incoming data or outgoing geospatial work products. The review will also be part of an internal process for checking work products, data exports, and other deliverables. The geospatial deliverables will meet the EPA Region 10 Geographic Information Systems Data Deliverable Guidance (EPA 2013), the National Geospatial Data Policy Procedure for Geospatial Metadata Management (EPA 2010), and the National Geospatial Data Policy (EPA 2008). The checklist includes items related to these EPA requirements, as well as a place for independent reviewers to verify calculations. The independent reviewers will be persons with the appropriate subject matter expertise, but who were not specifically involved in the development of the work product.

8.3 Other Project Content QA/QC

In addition to the QA/QC procedures specified above for tabular and geospatial data, other key quality review procedures related to the project include document control/versioning, laboratory and validator quality control, standardized sample nomenclature, location positional accuracy, field methods, and subject matter expert review of content. These QA/QC procedures are described in the QAPP (AECOM and Geosyntec 2018), the Final Work Plan (Geosyntec 2017), and the various field sampling plans. A listing of relevant documents and sections containing QA/QC methodology and associated subject matter experts responsible for overall QC of content is included on Table 6.

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~~7.~~9. REFERENCES

AECOM (AECOM Technical Services). 2017. Project SharePoint User Guide. Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling. Portland Harbor Superfund Site. December.

AECOM ~~(AECOM Technical Services)~~ and Geosyntec (Geosyntec Consultants, Inc.). 2018. Draft Quality Assurance Project Plan. Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling. Portland Harbor Superfund Site. January.

EPA. (U.S. Environmental Protection Agency). 2008. National Geospatial Data Policy. August 24.

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EPA. 2013. U.S. EPA Region 10 Geographic Information Systems (GIS) Data Deliverable Guidance

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Geosyntec. 2017. Final Work Plan. Portland Harbor Pre-Remedial Design Investigation Studies, Portland Harbor Superfund Site, Portland, Oregon. Prepared for the Pre-RD AOC Group for submittal to EPA Region 10 (attached to the final Statement of Work). 19 December.

Germano & Associates. 2014. Sediment Profile Imaging Report, Characterization of the Lower Willamette River with Sediment Profile Imaging: Changes in Space and Time. June 2014.

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TABLES

Table 1. Primary Software/Hardware

Description
Geographic Information Systems (GIS)
ESRI ArcGIS® Advanced, Standard 10.5.1
AECOM Online ArcGIS Server
Global Positioning Systems (GPS) Hardware
ESRI ArcPad10.2, Trimble TerraSync 5.4.1 (Conventional)
ESRI Collector, Trimble Terraflex (WiFi/Mobile)
Data Management/Database
EQuIS Professional V6.6.0/Enterprise 6 Edition
Microsoft SQL Server 2013/SQL Server Management Studio
AECOM EDD Format V2.5.3 (Internal Use)
Scribe v3.10 (United States EPA Submittals)
Project Collaboration
SharePoint Server 2013
Microsoft Office 2010

Table 2. Network/Portal Mappings

Primary Purpose	Pathway/URL
Primary Project Directory	(b) (6)
Geospatial Base Layer Data	
Project SharePoint	

Table 3. Data Manager Key Roles and Responsibilities

Role	Person(s)	Role Responsibilities	QC Responsibilities
~~Lead~~ Data Manager	Mike Surowiec (AECOM ~~Manager~~) ~~Jamey Rosen (Geosyntec Lead)~~	Data ~~management lead~~ Manager responsible for development and implementation of standards, procedures, and processes to produce high-quality tabular and geospatial data. ~~-~~Responsible for c~~C~~oordination with the ~~United States Environmental Protection Agency (~~EPA~~)~~, single point-of-contact with EPA's Scribe.NET coordinator, and ~~/or~~ Oregon Department of Environmental Quality regarding all data matters, meetings, etc. Coordination with AECOM Online resources/personnel.	Oversight and implementation of overall project tabular and geospatial QA/QC measures and standards.
Deputy Data Manager	Jamey Rosen (Geosyntec)	Deputy Data Manager responsible for coordination and implementation of all Geosyntec tabular and geospatial management standards, procedures, and processes to produce high-quality tabular and geospatial data.	Oversight and implementation of tabular and geospatial QA/QC measures and standards primarily for data analysis tasks.
Project QA/QC Manager	Amy Dahl	Oversee all aspects of project QA and QC, including primarily field and laboratory audits, review of field and laboratory reports, assessment of final data usability, limitations and completeness, review of field and laboratory non-conformance and corrective actions, and data validation oversight.	Overall lead for project QA/QC as defined under Role Responsibilities.
Data ~~Manager~~Analyst	Michelle McClelland Jody Lovell Ian Sahlberg ~~Denise Yee~~Josie Smith Denise Yee	Responsible for monitoring and ~~quality assurance/ quality control of~~reviewing incoming field data on the project SharePoint site, preparing EQuIS ~~electronic data deliverables (~~EDDs~~)~~ and loading to the project database, archiving raw data files to the network, preparing and uploading EDDs to Scribe.NET, and extracting/transmitting tabular data from the project database to team members.	Complete the forms and tasks defined in the Field Data Submittal QA/QC Checklist~~,~~ and the Lab Data Submittal QA/QC Checklist.
GIS Staff	Cary Kindberg Mason Struna Mike Inman	GIS staff responsible for reviewing field data, spatial post-processing, and management of historical and new geospatial deliverables. Also responsible for GIS analysis, and preparation of geospatial deliverables to meet project requirements.	Complete the forms and tasks defined in the GIS Data Detail Check Form.
Field ~~Data Management~~	Cary Kindberg ~~Field~~	Field ~~data~~ geospatial and GPS ~~management~~ data coordinator ~~staff~~	Post-process field crew GPS data, verify

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Role	Person(s)	Role Responsibilities	QC Responsibilities
~~Staff~~GPS Data Coordinator	~~Technicians (to be determined)~~	responsible for supporting GPS data collection activities, ~~/~~troubleshooting, GPS issues, post-processing GPS data, verifying ground control, reconciling positional accuracy issues. ~~, managing incoming data from field crews, transcribing data, and uploading data from field office to project SharePoint site.~~	positional accuracy of new location/station information, perform QA/QC checks of subcontractor GPS data.
Incoming Field Data Coordinator	Field Technicians (to be determined)	Field data management staff responsible for managing incoming data from field crews, transcribing data, and uploading data from field office to project SharePoint site.	Perform the field office-based tasks defined in the Field Data Submittal QA~~/~~QC Checklist.
Project Chemist(s)	Karen Mixon Jen Garner	Review 3~~rd~~third-party data validation results for all laboratory analyses and apply validation qualifiers to project DVA workbook.	Perform QA/QC of validation results and submit DVA workbooks to Data Analysts for loading to project database.
Project SharePoint Content Manager	Denyne McDonald Sasha Allen	Staff responsible for developing/editing SharePoint Libraries/Lists, granting access and managing user accounts, troubleshooting access issues, and interfacing with AECOM Online infrastructure personnel.	Maintain integrity of SharePoint libraries and list which are integral to overall tabular and geospatial data quality.
Data Users	Project Team Members, Pre-Remedial Design Group Members, Stakeholders	Any data consumer using AECOM Online resources, responsible for requesting and using data according to its intended purpose and quality, and per project privilege and confidentiality requirements.	Review loaded and distributed data and report any anomalies and potential corrections to Data Manager

~~Table 4. QA/QC and SME Roles~~

~~Study Name~~	~~Document~~	~~Reference~~	~~Content/Subject~~	~~Phone~~	~~Email~~

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	Name		Matter Expert	Number(s)	
Bathymetry Survey					
Surface Sediment Sampling					
Subsurface Sediment Coring					
Sediment Trap Sampling					
Surface Water Sampling			Kristen Durocher		
Fish Tissue Sampling			Betsy Ruffle		betsy.ruffle@aecom.com
Fish Tracking Study			Betsy Ruffle		betsy.ruffle@aecom.com
Porewater Sampling					

Acronyms:

DVA = Data Validation Assistant; EDD = electronic data deliverable; EPA = U.S. Environmental Protection Agency; GIS = geographic information systems; GPS = global positioning system; QA/QC = quality assurance/quality control

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Table 454. Location Nomenclature Codes

Study / Sampling Initiative	Location IDs
Baseline Sediment GrabsBaseline Sediment Grabs	PDI-B001 to PDI-B429PDI-B001 to PDI-B489
SMA Sediment Grabs & CoresSMA Sediment Grabs & Cores	PDI-S001 to PDI-S168PDI-S001 to PDI-S168
Surface Water TransectsSurface Water Transects/Sediment Traps	PDI-T01 to PDI-T07PDI-T001 to PDI-T008
Sediment Traps (points along transects)Porewater Station and Grab Locations	PDI-T06a, PDI-T06b PDI-T07a, PDI-T07bPDI-P001 to PDI-P008
Porewater Stations (if co-located with Sediment Grabs and Cores) SMB/Random Fish Locations	PDI-B001 to PDI-B428 PDI-S001 to PDI-S168PDI-SMB001 to PDI-SMB120
Porewater Stations (if separate / unique) SMB/Radio Acoustic Study	PDI-S190 and higherPDI-Vendor Serial Number
SMB/Random Fish LocationsSMB Study/Radio Tag	PDI-SMB001 to PDI-SMB120PDI-Vendor Serial Number
Acoustic Receiver Location	A01 –to A34
SMB Study / Radio Tag	PDI-SMBT01 to PDI-SMBT40

Acronyms:
ID = identification; SMA = sediment management area; SMB = smallmouth bass

Table 556. Field Forms Minimum Data Fields

Data Type	Minimum Data Field Requirements
Location	Unique Location ID, Location Type (River, Shoreline, etc.) Coordinate System, Datum, X-Y Location Coordinates, Date/Time, Recorded By
Sample	Sample ID (unique), Sample Type (e.g., normal, dup, etc.), Sample Method Code (e.g., continuous core), Sample Medium and/or Matrix Code (e.g., Sediment, Tissue, etc.), Depth, Date/Time, Recorded By
Biological	Unique Specimen ID, Species, Measurement Type (length, weight, etc.), Parameters Values, Unit of Measure (UOM), Date/Time, Recorded By
Field Measurements	Unique Measurement ID, Measurement Type (pH, DO, etc.), Parameters Values, UOM, Date/Time, Recorded By
Cores/Lithology	Unique Location ID, Depth Interval/UOM, Blow Counts, Sediment Description, Unified Soil Classification System (USCS) Code (or equivalent soil/sediment system code), Date/Time, Recorded By

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Table 64. ~~QA/QC and SME Roles~~Other QA/QC Documentation/Resources

Document/Study Name	Relevant QC ~~Reference~~Section(s)	~~Content~~/Subject Matter Expert
Quality Assurance Project Plan	*Section 4.2.1:* Sample Nomenclature Scheme; *Section 4.6:* Quality Control; ~~*Section 4.7:*~~ Instrument/Equipment Quality Control; *Section 5:* Data Quality Assessment; *Section 6.3*: Data Verification and Validation; *Table 4*: Sample Nomenclature	Jenny Pretare ~~Anne Fitzpatrick~~ Amy Dahl
Bathymetry Survey Field Sampling Plan	*Appendix A*: David Evans & Associates, ~~Multi-beam Bathymetric Survey of the Lower Willamette River Work Plan~~Hydrographic Survey Work and Quality Control Plan, Portland Harbor PDI Studies	Jonathan L, Dasler, PE, PLS, CH
Surface Sediment Field Sampling Plan	*Section 2.2*: Sample Nomenclature; *Section 4.2:* Station Position and Vertical Control; *Section 4.9:* Field Quality Control; *Section 6*: Data Management and Reporting; *Tables 2 - 4*: Station Location Coordinates, Target Depth, and Identification Schemes; *Appendix A*: Field Forms and Checklists	Anne Fitzpatrick
Subsurface Sediment Coring Field Sampling Plan	*Section 2.2.3*: Sample Nomenclature; *Section 4.2:* Station Position and Vertical Control; *Section 4.9:* Field Quality Control; *Section 6*: Data Management and Reporting; *Table 3:* Station Identification Scheme, Mudline Elevations, and Location Coordinates; *Appendix A*: Field Forms and Checklists	Anne Fitzpatrick
Surface Water and Sediment Trap Field Sampling Plan	*Section 2.3*: Sample Nomenclature; *Section 4.2:* Station Position and Vertical Control; *Section 4.8:* Field Quality Control; *Section 6*: Data Management and Reporting; *Table 2*: Station Location Coordinates, Target Depth, and Identification Scheme; *Appendix A*: Field Forms and Checklists	Kristen Durocher
		~~Kristen Durocher~~
Fish Tissue Field Sampling Plan	*Section 4.2:* Station Position and Navigation; *Section 6*: Data Management and Reporting; *Table 1*: Sample Identification and Coordinates; *Appendix B*: Field Forms	Betsy Ruffle
Acoustic Fish Tracking Study Field Sampling Plan	*Section 2.5*: Sample Nomenclature; *Section 4.3*: Station Positioning /Navigation; *Section 5*: Data Management and Reporting; *Table 1:* Coordinates of Proposed Receiver Locations; *Appendix B*: Field Forms and Checklists	Betsy Ruffle
Porewater Field Sampling Plan	*Section 2.4.2* Sample Nomenclature; *Section 4.2:* Station Position and Vertical Control; *Section 4.8:* Field Quality Control; *Section 6*: Data Management and Reporting; *Table 1*: Station Location Coordinates and Identification Scheme; *Appendix A*: Equipment Checklist and Field Forms	Nicky Moody

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FIGURES

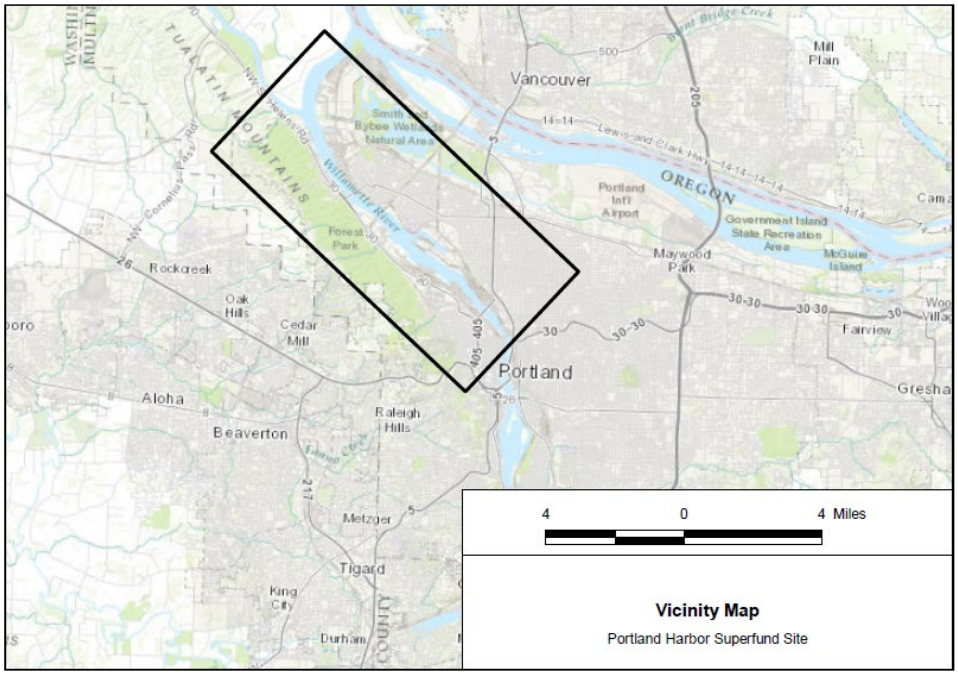


Figure 1. Project Location

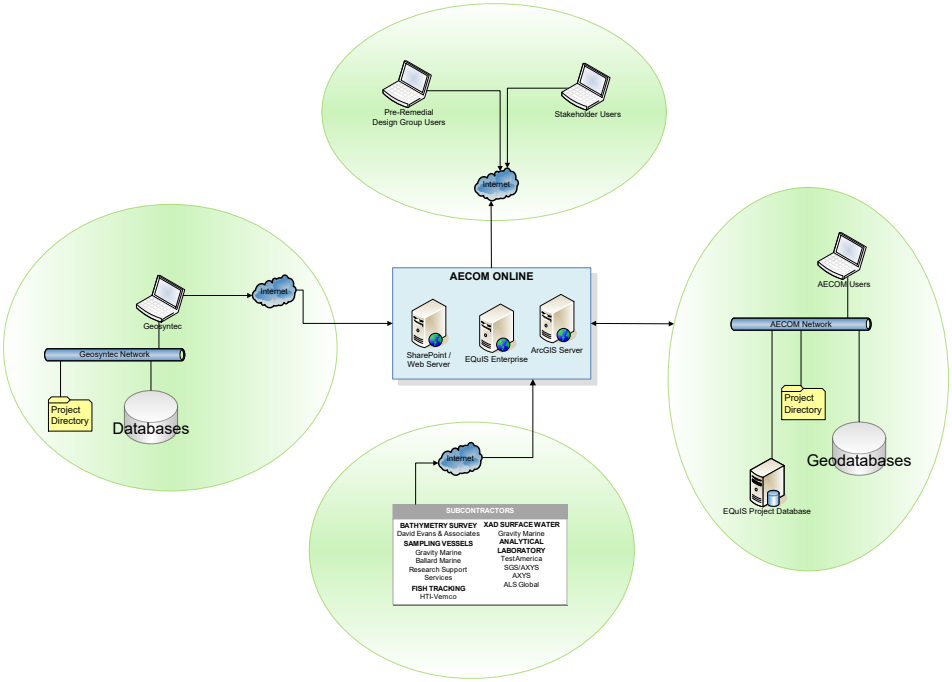


Figure 2. Network Diagram

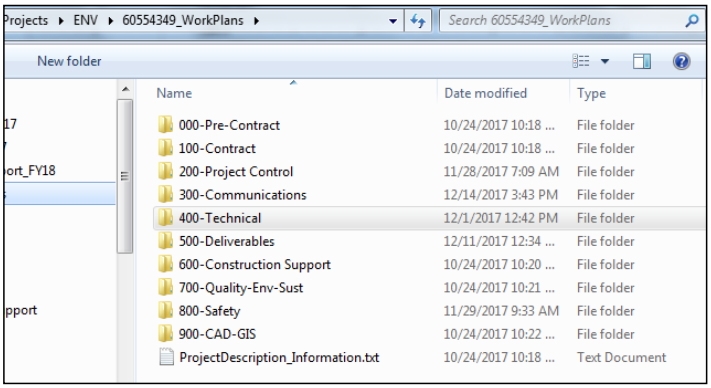


Figure 3. Project Directory Root

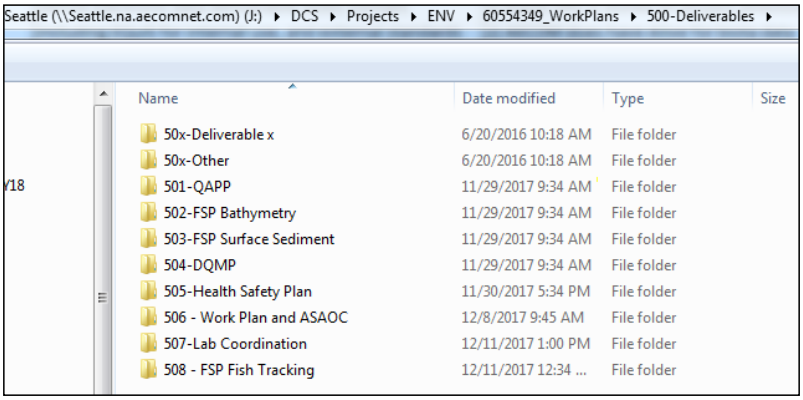


Figure 4. Work Plan Subdirectory

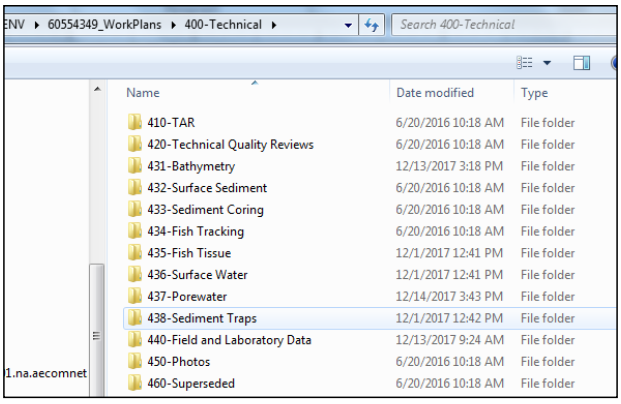


Figure 5. Primary Field Data Subdirectory

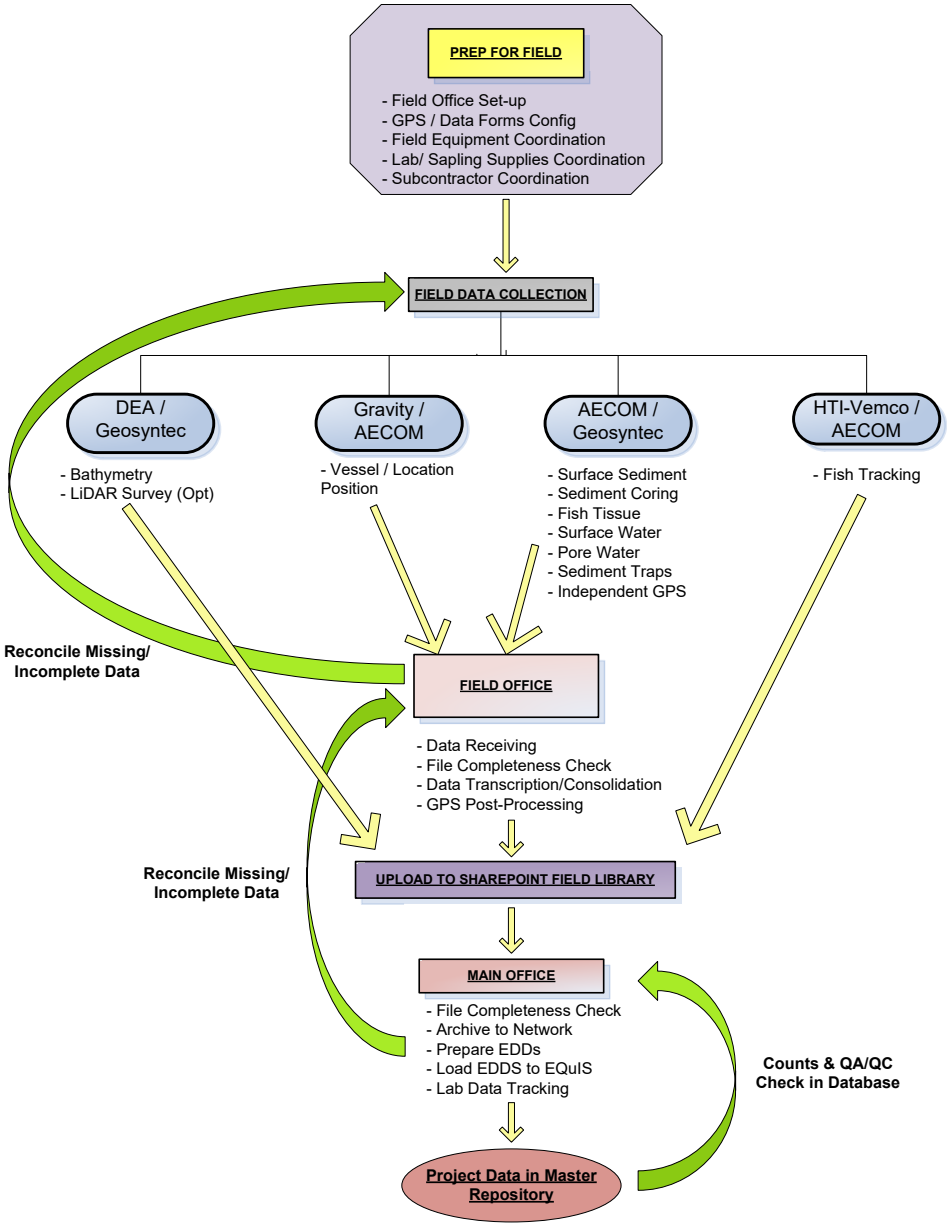


Figure 6. Active Field Data Collection Workflow Diagram

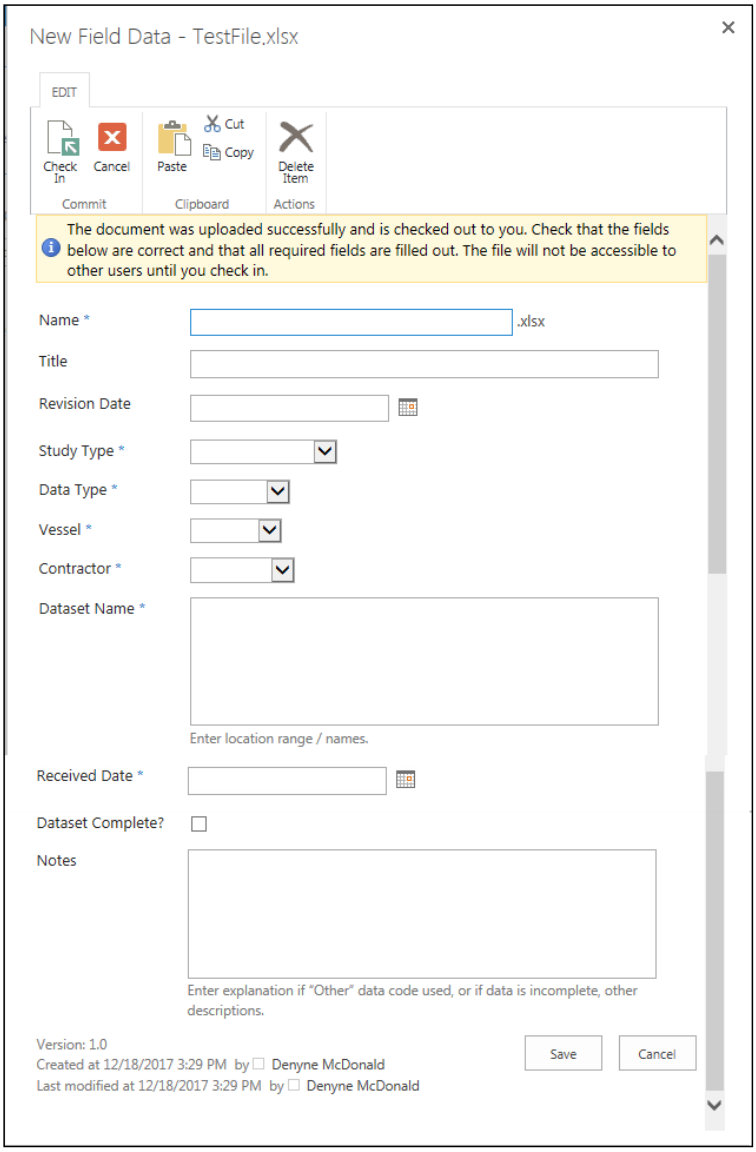


Figure 7. New Field Data Document Metadata Form

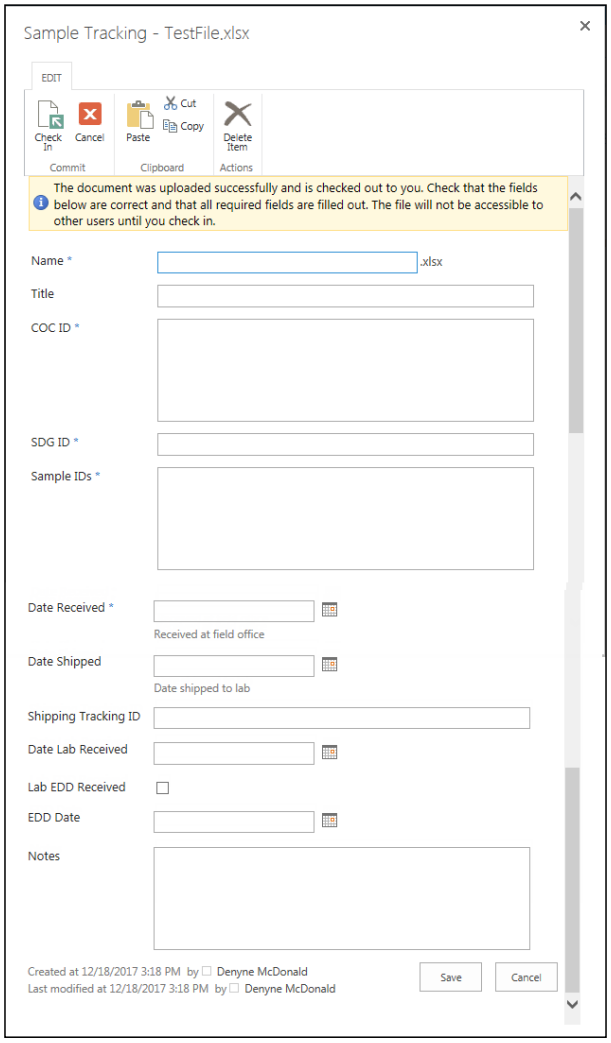


Figure 8. Sample Tracking Library

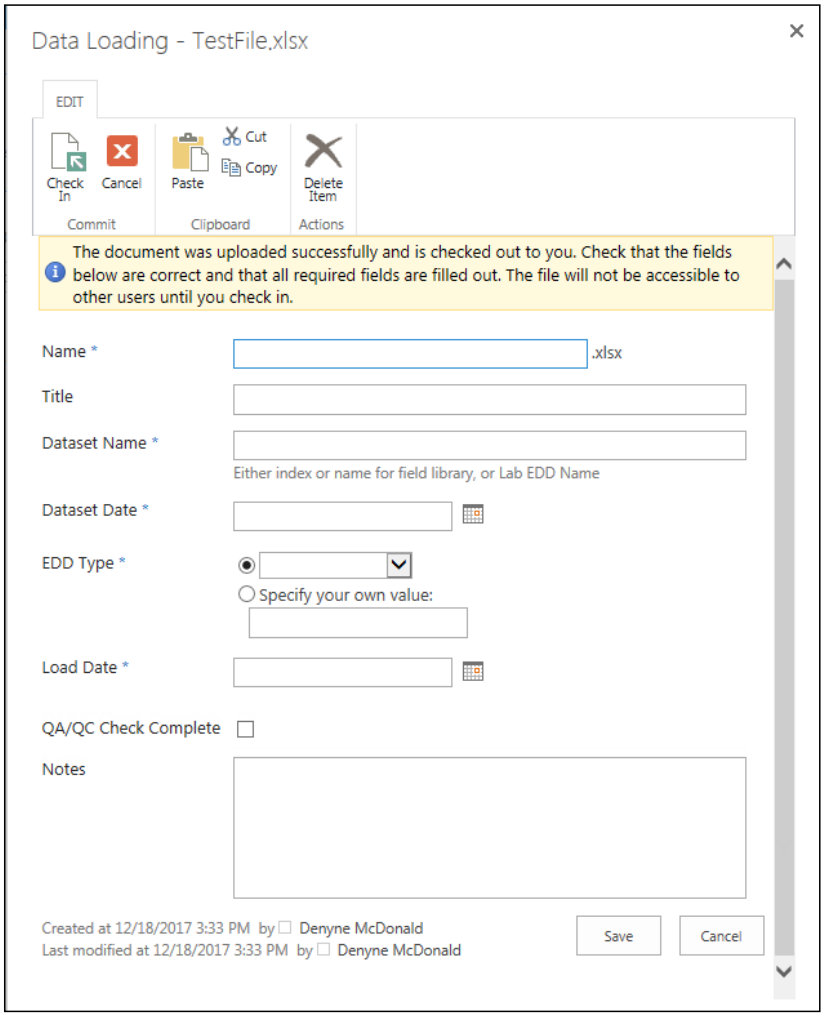


Figure 9. Data Loading Library

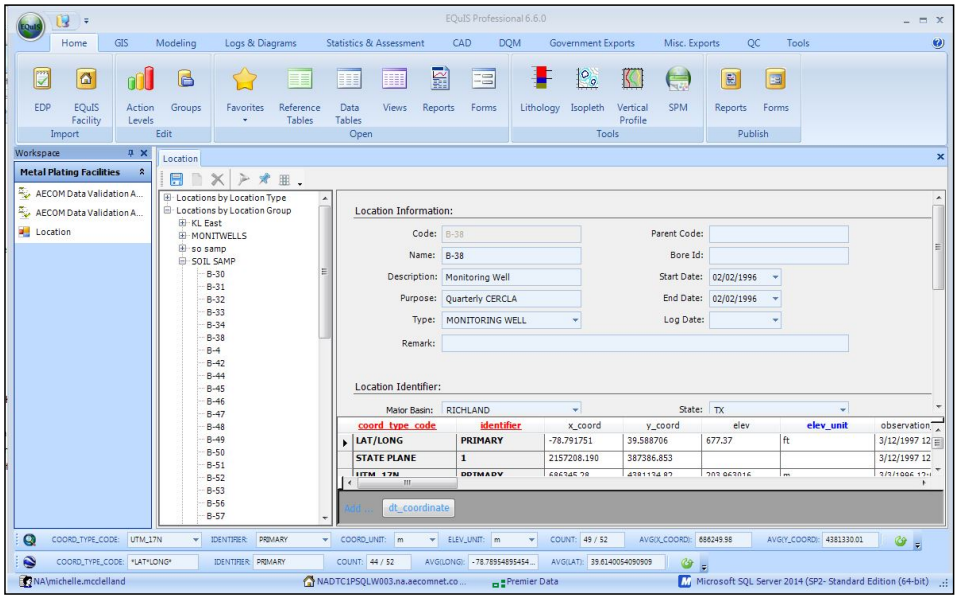


Figure 10. EQuIS Professional User Interface

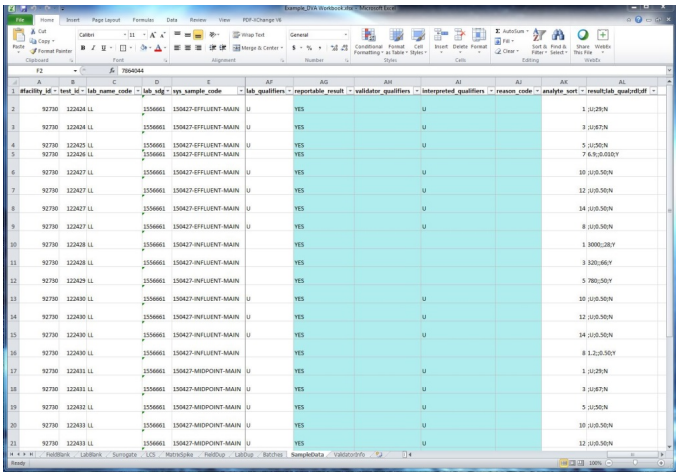


Figure 11. Validator Workbook Example

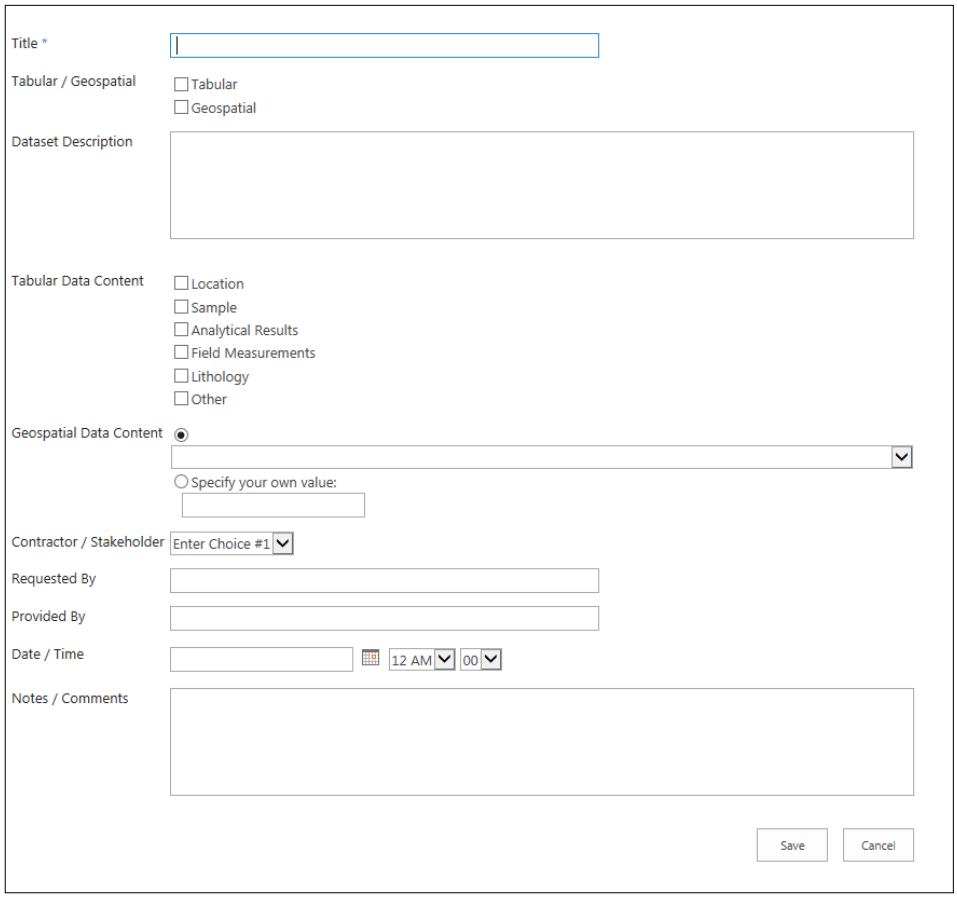


Figure 12. Data Exchange SharePoint List

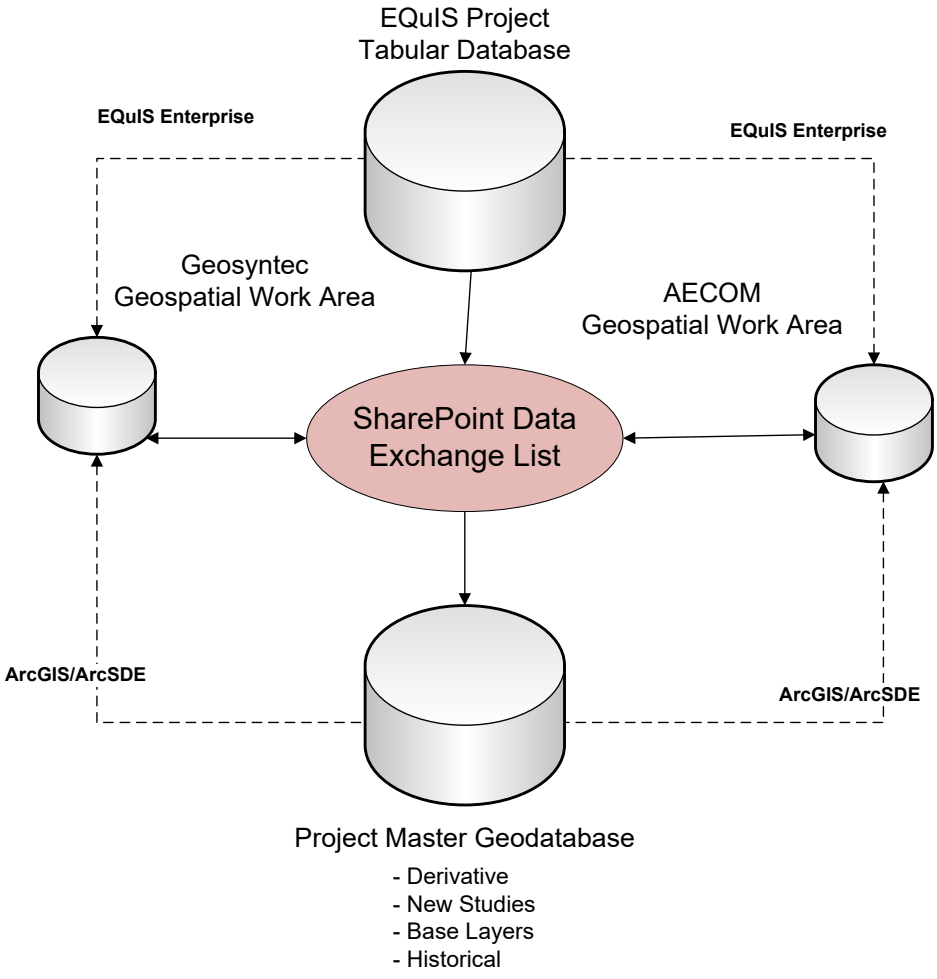


Figure 13. Data Exchange Configuration

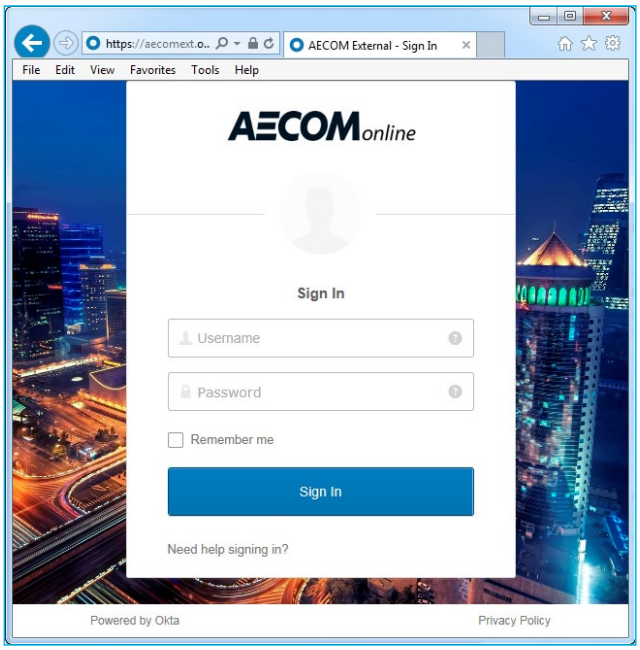
APPENDIX A

SharePoint Portal Access Instructions

Log in to Aecomext Okta

From the web browser, type in the URL provided (https://aecomext.okta.com)

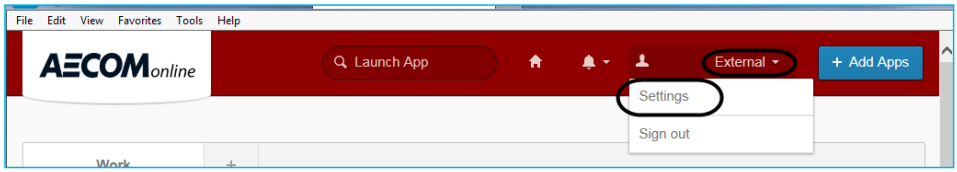
1. Type in the **Username** (this can be found on your activation welcome email)



2. Type in your **Password** (if you forgot your password click the “Need help signing in? link below the “Sign In” button and follow the instructions at the end of this document.)
3. To save the username for easy access, click on the **Remember me** checkbox (this will not save the password, only the username)
4. Click on the **Sign In** button

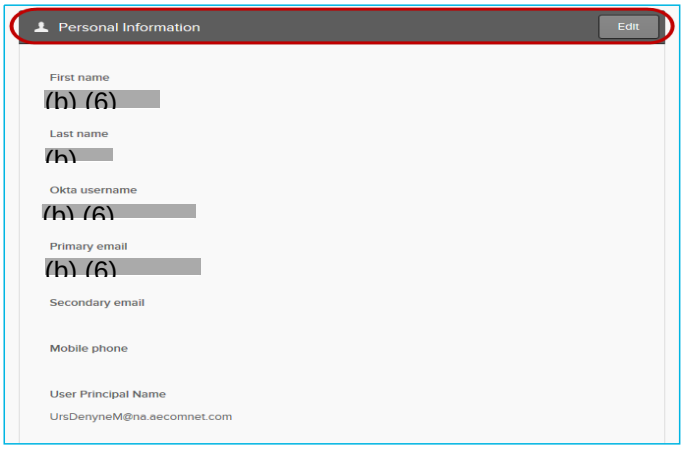
Set up Account / Edit Account

For first time users, the system will ask you to set up your account. Once this is established, it can be edited from the **Settings** on username dropdown.

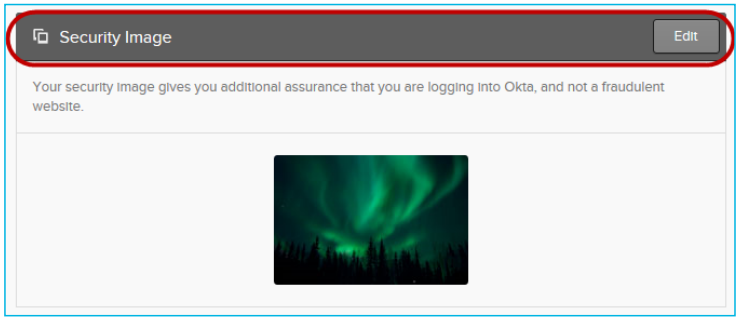


From the **Settings** page, you can set-up/change the following:

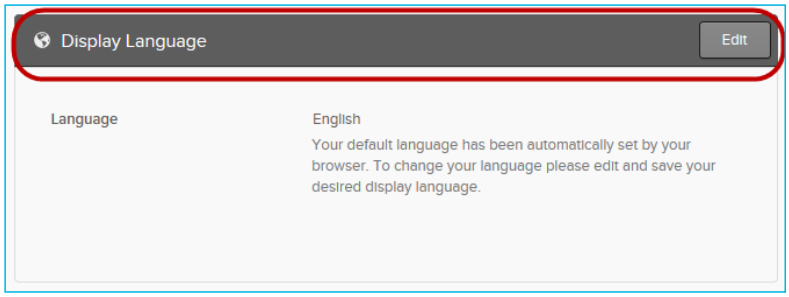
- **Personal Information** - Name and email



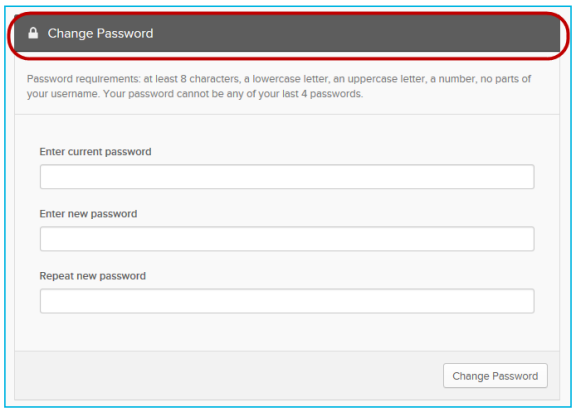
- **Security Image** - Pick an image that will show in the **Sign In** window to validate you are logging in to your Okta site.



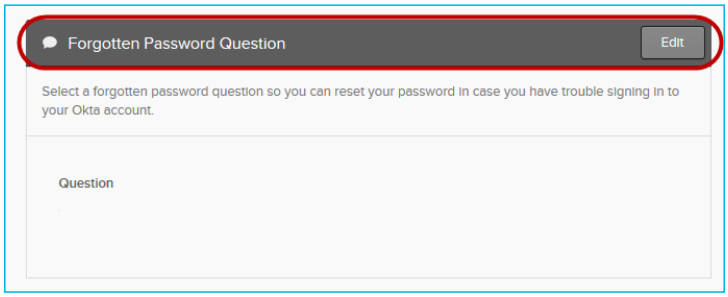
- **Display Language** – Pick the desired display language.



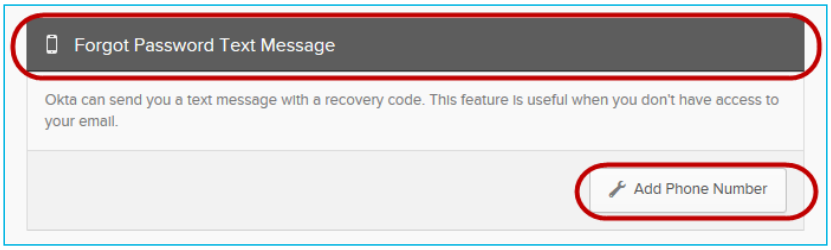
- **Change Password** – Enter the current and new password, and click on the **Change Password** button to save this information.



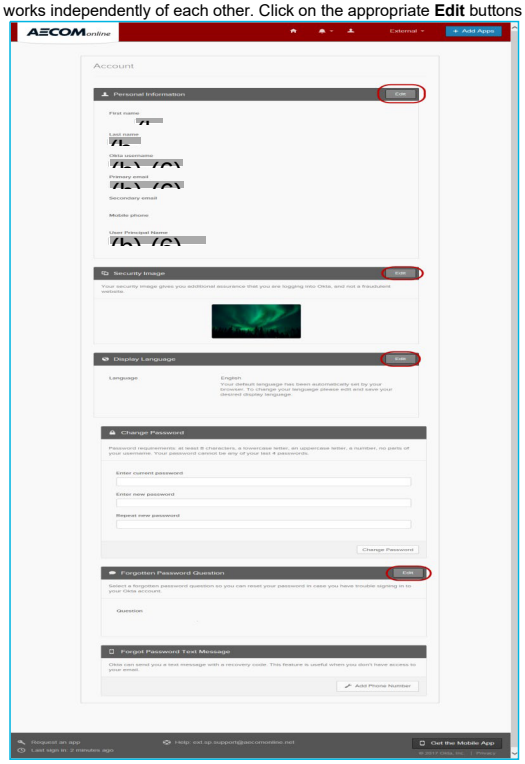
- **Forgot Password Question** – This will be used to reset a password if it is forgotten.



- **Forgot Password Text Message** – This will be used to receive a forgotten password text message.



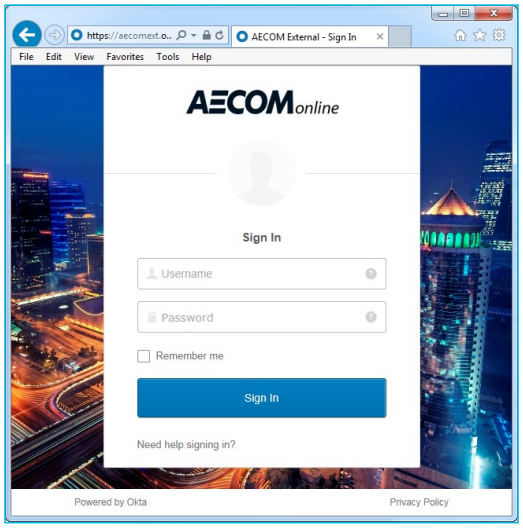
Note: Each of these sections works independently of each other. Click on the appropriate **Edit** buttons to access each area.



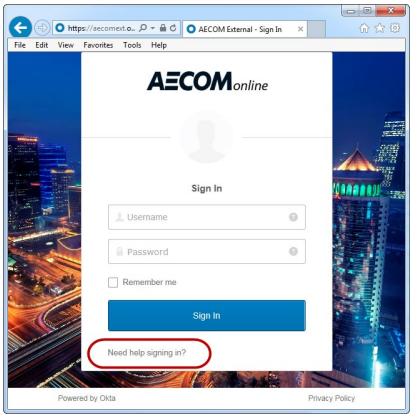
Forgotten Password Reset in Okta

For users with an existing Okta account that have forgotten their password, follow the steps below.

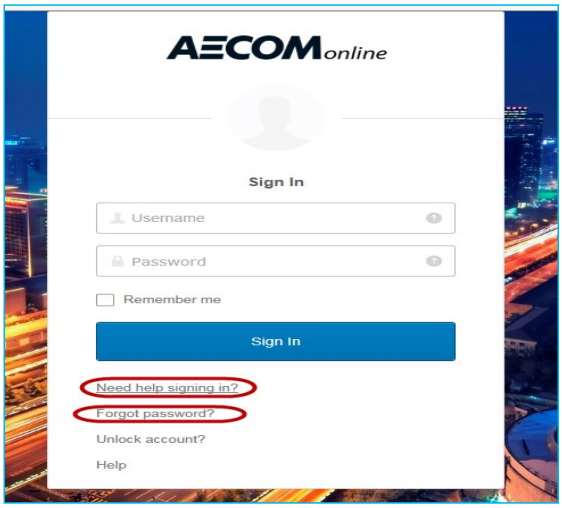
1. Navigate directly to the Okta website (https://aecomext.okta.com).



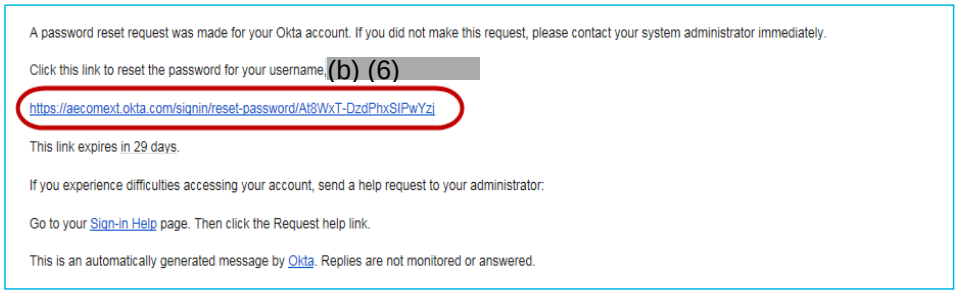
2. Enter your full email address in the Username field.
3. Click the “Need help signing in?” link just below the “Sign In” button.



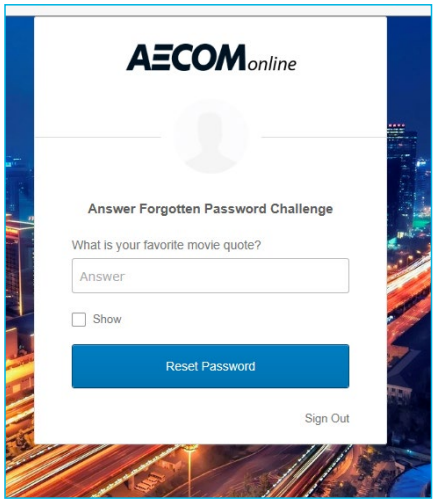
4. Click the “Forgot Password?” option.



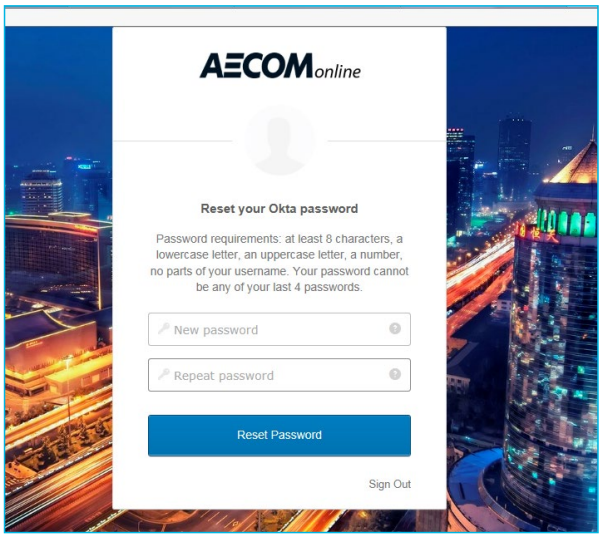
5. Follow the on-screen prompts to complete the process.
6. An email will be sent to you containing a link to allow you to reset your password via Okta.



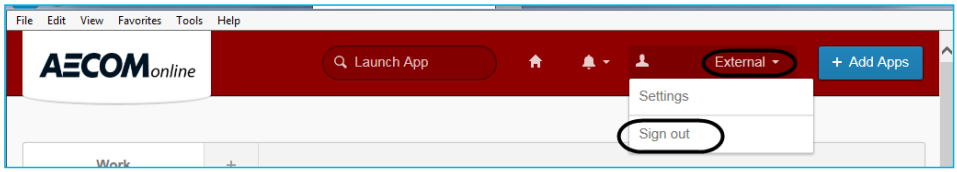
7. From the Okta website accessed via the email link, provide the requested information and click the “Reset Password” button.



8. Using the password criteria provided on the screen, create your new password and click the “Reset Password” button.



9. You will then be logged into the Okta website. At this point you can exit the Okta website and login to the SharePoint site with your new password.


File Edit View Favorites Tools Help
AECOM online
Launch App
External
+ Add Apps
Settings
Sign out
Work

APPENDIX B

~~Tabular Data/EQuIS~~ Project Database: EQuIS Specifications~~Specifications~~

APPENDIX C

EPA Region 10 Deliverables: Scribe.NET Specifications

~~Tabular Data/EQuIS Specifications~~

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~~Appendix C~~APPENDIX D

List of Historical Tabular Datasets

Data Source File Name	Matrix	Start Date	End Date	Record Count	Notes
2016-02-08 PHRI A3[1]	SO	8/6/2001	9/1/2005	417	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	WO	8/13/2002	3/12/2008	51334	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	TA	6/25/2002	5/28/2008	136255	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	SEIRT	4/6/2004	1/14/2010	26795	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	SE	5/6/1997	3/25/2010	787832	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	WP	11/2/2004	4/25/2005	378	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	WSXADC	11/9/2004	3/10/2007	30157	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	WS	2/5/1992	9/5/2008	37866	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	WSXAD			4182	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]		11/9/2004	3/10/2007	30080	Source: 2016 RI.pdf
2016-02-08 PHRI A3[1]	TZW	1/29/2004	10/6/2007	34486	Source: 2016 RI.pdf
AppendixM_Data_Files Phase 1 GS.xlsx	SE	6/1/1987	6/10/2008	52359	
AttachA3_SCRA_SW0507.xlsx	WS	7/5/2005	7/20/2005	7056	
CONFIDENTIAL_Geosyntec Data 2016.xlsx	SE	3/4/2016	3/4/2016	286	Geosyntec; Sediment Sampling Data Report, Swan Island Lagoon, Aug 2016
CopyofAppendixN_DataFiles.xls	SE	5/12/2008	3/25/2010	28726	GSI Water Solutions, Inc. and Hart Crowser, Inc. Field and Data Report, Downtown Portland Sediment Characterization Phase II, June 2010
GrainSize_TOC_2015.xlsx	SE	8/11/2014	10/23/2015	1592	See Note 2
GrainSize_TOC_2015.xlsx	S	8/22/2014	8/22/2014	7	See Note 2
GS Data Complied flat (070517jaa).xlsx	SE			1095	Geosyntec generated. Contains Grain Size Data. Kleinfelder[5]
Kleinfelder 2014 - Grain Size Analysis Compiled.xlsx	SE		12/3/2014	1660	
Kleinfelder 2014 All Data - flat file (070617jaa).xlsx	SE		12/3/2014	1641	Geosyntec generated. Contains Grain Size Data. Kleinfelder[5]
LWGFSdbwEECA_GASCOandArkema_20141117_v2.accdb	SE	6/10/1997	4/15/2013	1335104	Source[4]
NF2015SampleData.xlsx	SE	8/11/2014	10/23/2015	40960	See Note 2. Newfields[3]
NF2015SampleData.xlsx	WS	8/11/2014	10/27/2015	3230	See Note 2. Newfields[3]
NF2015SampleData.xlsx	S	8/22/2014	8/22/2014	378	See Note 2. Newfields[3]
NF2015SampleData.xlsx	W	8/11/2014	10/26/2015	911	See Note 2. Newfields[3]
NF2015SampleData.xlsx	FP	10/21/2015	10/21/2015	242	See Note 2. Newfields[3]
SCRA_R3WS2_20070320.xlsx	WS	9/4/2006	9/13/2006	8474	

Data Source File Name	Matrix	Start Date	End Date	Record Count	Notes
SCRA_R3WS3_20070327.xlsx	WS	11/2/2006	11/5/2006	22422	
SCRA_R3WS4_20070726_0.xlsx	WS	3/8/2007	3/8/2007	10	
SCRA_R3WS4_20070831_0.xlsx	WS	1/15/2007	3/10/2007	21810	

Notes:

1. 2016-02-08 Portland Harbor RI Appendix A3_RI-Dataset_RA-SummedParams.accdb
2. Appears to be 2015 Exxon Field Sampling Report.
3. NewFields Concentrations and Character of PAH in Sediments in the Proposed Remedial Alternatives Area of the Portland Harbor Superfund Site, River Miles 5-6 2015 Investigation, March 2016.
4. Portland Harbor RIFS Feasibility Study June 2016_840000.pdf.
5. Kleinfelder Sediment Sampling Data Report, June 2015.

Matrix Codes: SE = Sediment; W = Water; WS = Surface Water; WP = Seep Water; SEIRT = Sediment from In River Trap; TA = Tissue; WSXADC = surface water from XAD column; WSXAD = surface water from XAD column + filter; TZW = Transition Zone Water; S = Solid.

~~Appendix D~~APPENDIX E

Geodatabase Specifications

~~Appendix E~~APPENDIX F

Data Request/Transmittal Form

DATA REQUEST / TRANSMITTAL FORM	
Title	
Tabular / Geospatial	☐ Tabular ☐ Geospatial
Dataset Description	
Tabular Data Content	☐ Location ☐ Sample ☐ Analytical Results ☐ Field Measurements ☐ Lithology ☐ Other
Geospatial Data Content	Geodetic Parameters (projection, coordinate system, etc.) Format (ArcGIS version, FGDB, web service, etc.) Content (Acoustic Fish Array, Bathymetry, Base Layers, Derivative/Analysis Work Product, Hybrid Tabular/Geospatial)
Contractor / Stakeholder	
Requested By	
Provided By	
Date / Time	
Notes / Comments	

~~Appendix F~~APPENDIX G

~~Geospatial~~ Tabular Data QA/QC Forms

APPENDIX H

~~Tabular~~Geospatial Data QA/QC Form

GIS Detail Check Report

Project Name:	Portland Harbor	**Project Number:**	60554349
Project Location:	Portland, OR	**Client Name:**	Pre-Remedial Design Group
PM Name:		**PIC Name:**	

Identifying Information

This section is to be completed by the Project GIS Lead.

Assigned Checker:

Deliverable to be checked:

Work Product Originator:

Checker's comments required by:

This Detail Check is a technical edit only. This is a detail check for Report submittal.

Submitted by: _____

Project GIS Lead Signature **Date**

Checker Report

This Section is to be completed by the Checker.

Check box A **or** B:

A. All items have been found to be correct. Checker has no comments.

_____ _____

Checker Signature **Date**

or

B. Checker's comments have been provided on:

Deliverable
Comment and Disposition Form
Other _____

This section is to be completed after verification of comment incorporation, if box B is checked off above.

Check box C **or** D and E:

C. Back-check of Checker's comments has been performed by Originator AND all issues have been resolved between Originator and Checker.

or

D. Unresolved issues have been submitted to the Project Manager, Principal-in-Charge or designee for resolution.

and

E. Verification of correct incorporation of resolved comments into final document is complete.

_____ _____

Checker Signature **Date**

APPROVAL and DISTRIBUTION

*To be signed after box A **or** E are completed.*

The Detail Check has been completed. Any significant issues not resolved between the Checker and the Originator have been resolved by the Approver.

_____ _____

Project Manager, Principal-in-Charge or Designee Signature **Date**

Distribution:

Project Central File – Quality folder

GIS Detail Check Report

Map Product

This Section is to be completed by the Reviewer.

Digital Review Summary:

Standard Elements Check List

Township/Range/Section (PLSS)
☐ All correct
☐ Edits Needed
☐ N/A

Y / N / NA Graphic text is spelled correctly

Y / N / NA Projection of MXD/data:

☐ Other _____

☐ Other _____

Hard-Copy Review Summary:

Standard Elements Check List (check where present, circle N/A where appropriate)

Y / N / NA North Arrow & scale bar present
Y / N / NA Source citations
Y / N / NA Figure or Map Number

Y / N / NA All logos present
Y / N / NA Map features are uniform for all project/report maps
Y / N / NA Graphic text in data frame is uniform size

Y / N / NA All features are in legend
Y / N Path name to PDF is correct
Y / N / NA Initials on path name
Y / N Figure is 508 Compliant
☐ Other _____

Data Product

This Section is to be completed by the Reviewer.

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